NEW WORLDS SCIENCE FICTION

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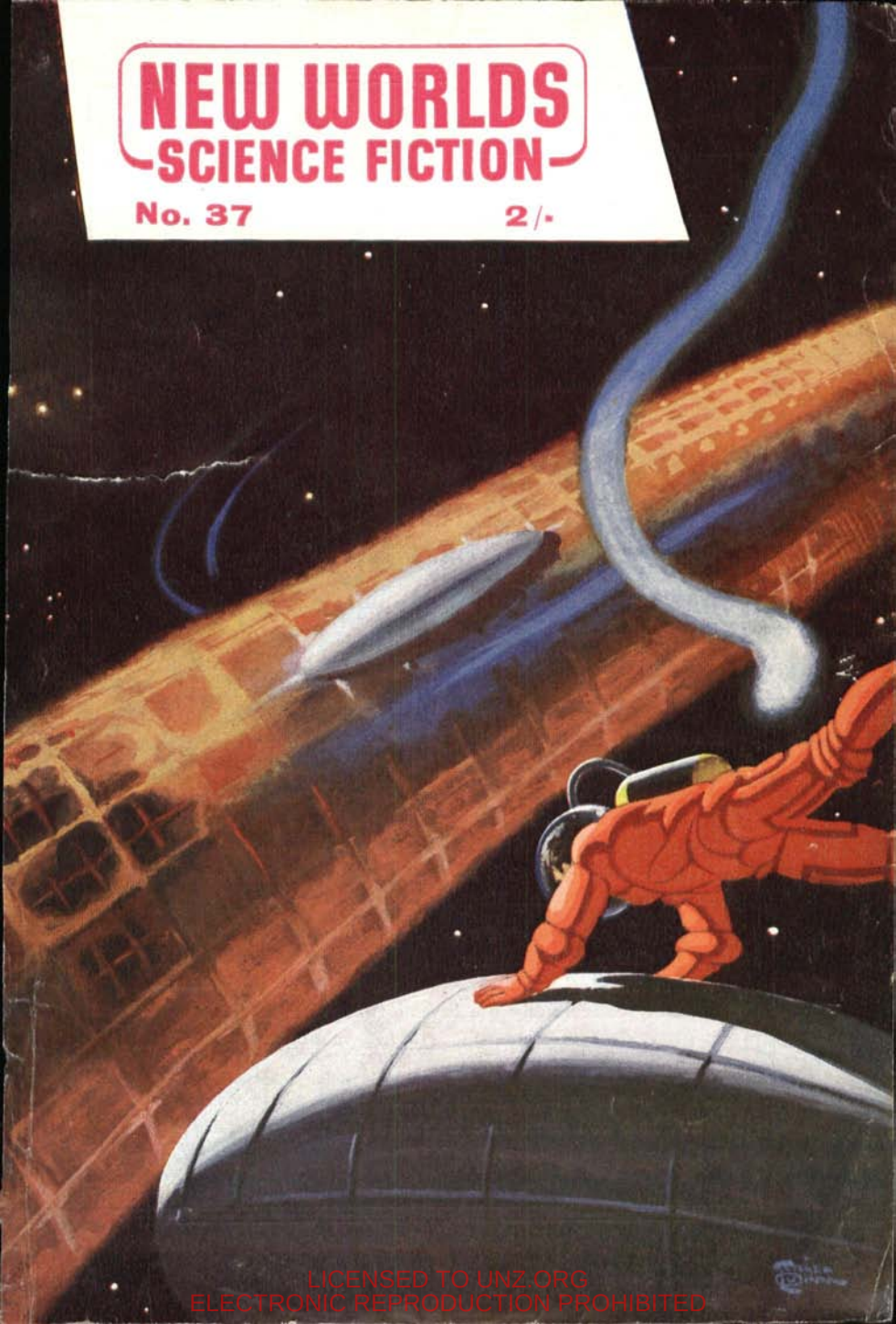

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E. R. James

West Yorkshire

Born in Gloucestershire thirty-four years ago he began reading the then available science fiction and fantasy stories while still in his formative years and similar to so many of his contemporaries commenced writing solely for the pleasure of expressing his thoughts on paper. It was not until 1947, having come out of Normandy with a bomb-blinded right eye, that he began to seriously plan a semi-literary career. To this end he took a job as a postman in a rural Yorkshire area where he and his wife live because "I have found," he states, "that postal work fits in with a career of part-time writing very well. In fact, I declined an offer of an indoor clerical appointment in the Post Office because I felt that the outdoor work left my mind less exhausted and more eager for thinking up stories."

With the courage of such convictions he has now sold over thirty-five stories ranging from 2,000 to 40,000 words most of which have been built around "ideas" we may conceivably see in the future, and often entail a great deal of research into the scientific side of his theories.

He is related to author Francis G. Rayer and they have had at least one collaborated story published.

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NEW WORLDS SCIENCE FICTION

VOLUME 13

No. 37

MONTHLY

JULY 1955

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'Survey' Report

Regular readers will remember that in the February Editorial I gave a preliminary preview of some of the interesting facts beginning to emerge from the first *Survey* questionnaire published in the December 1954 issue. In February the questionnaire was repeated to give late-comers an opportunity of recording their information and brought a further deluge of replies which are still coming in and does not allow final analysis to yet be made.

However, in May I was guest speaker at the Science Fiction Luncheon Club in London and upon that occasion released to the publishers and press representatives present an analysis of the first 1000 British replies the *Survey* had produced. Owing to the resultant press publicity, both trade and national, I feel that it is only fair to publish those statistics to our readers this month—although there is a general interest in the type of people who read science fiction, the *Survey* was primarily for our own information and only applies to readers of *New Worlds*. There being varying classes and levels of science fiction, the following results cannot be applied to a general national readership.

As I stated in February, we have been extremely gratified by the response to our request for information and although there were many surprises in the statistics most of them bore out our assumption that we were publishing predominantly for an adult reading audience. Later this year we will publish the final results, which I do not think will vary a great deal from the percentages below, although there must be some variations. At the same time we will show the analysis of our overseas readership.

Age: 31.7 years. Male readers: 95% ; Single: 47% ; Married: 48%

Age Groups : 5% under 20 years ; 15%, 20-24 years ; 30%, 25-30 years ; 29%, 31-40 years ; 4% over 50 years ; 12%, 41-50 years.

Salary Groups : Males only (per annum) ;
Under £250 - 4% ; £250-£500 - 37% ; £500-£750 - 34% ;
£750-£1000 - 17% ; over £1000 - 8%.

Degrees : 26% (13% B.Sc.; 4% M.A.; 2% M.D.; 7% others).

Technical Employment : 35%.
7% Chemical, Pharmaceutical, Doctors, Lab. technicians, etc.;
6% Engineers ; 6% Electrical ; 4% Teachers ; 3% Radio ;
3% Mining ; 6% others (Shipping, Legal, Banks, etc.).

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Non-Technical employment : 65%.
10% Admin.; Executive, etc. 6% R.A.F.; 4% G.P.O.; 5% Tradesmen; 3% Own Business; 3% Office clerical; 2% each Musicians, Police, Agricultural; 28% others, various.

Education Groups :
27% Secondary; 21% Grammar; 17% Technical; 9% University; 9% Central; 4% Private; 5% Public; 8% none listed.

New Worlds features in order of preference :
1. Novelettes. 2. Short stories. 3. Serials.
4. Articles. 5. Book Reviews. 6. Postmortem.
10% placed the Editorials in an average of 3rd place.

Library : 71% showed they belonged to one or more.

Preference for books or magazines: 30% didn't mind; 47% No; 23% Yes.

Average number of other magazines read : 4.

Hobbies : Averaged 2 per person.
23% included Reading and another 4% added Science Fiction; 15% Photography; 15% Sport; 10% Music; 9% Writing; 10% Indoor Games; 8% Astronomy; 9% Radio and T.V.; 6% Dancing and Jazz; 3% Astronautics.
The remaining percentage was spread over an extremely wide variety of hobbies.

Of the 5% replies from our femine readers, their statistics are shown as :

60% Single; 40% Married; 60% Office employment; 20% Technical (G.P.O., Teachers, Draughting, etc.); 20% Housewives.

Average age: 28 years; *Average Salary*: £250-£500;
60% belong to a Library.

The foregoing statistics build a tremendously interesting picture of our readership and compares closely to a similar Survey run by *Astounding Science Fiction* in America in 1949, when 2000 returns were used as a basis.

Once again, many thanks to everyone who made this analysis possible.

John Carnell

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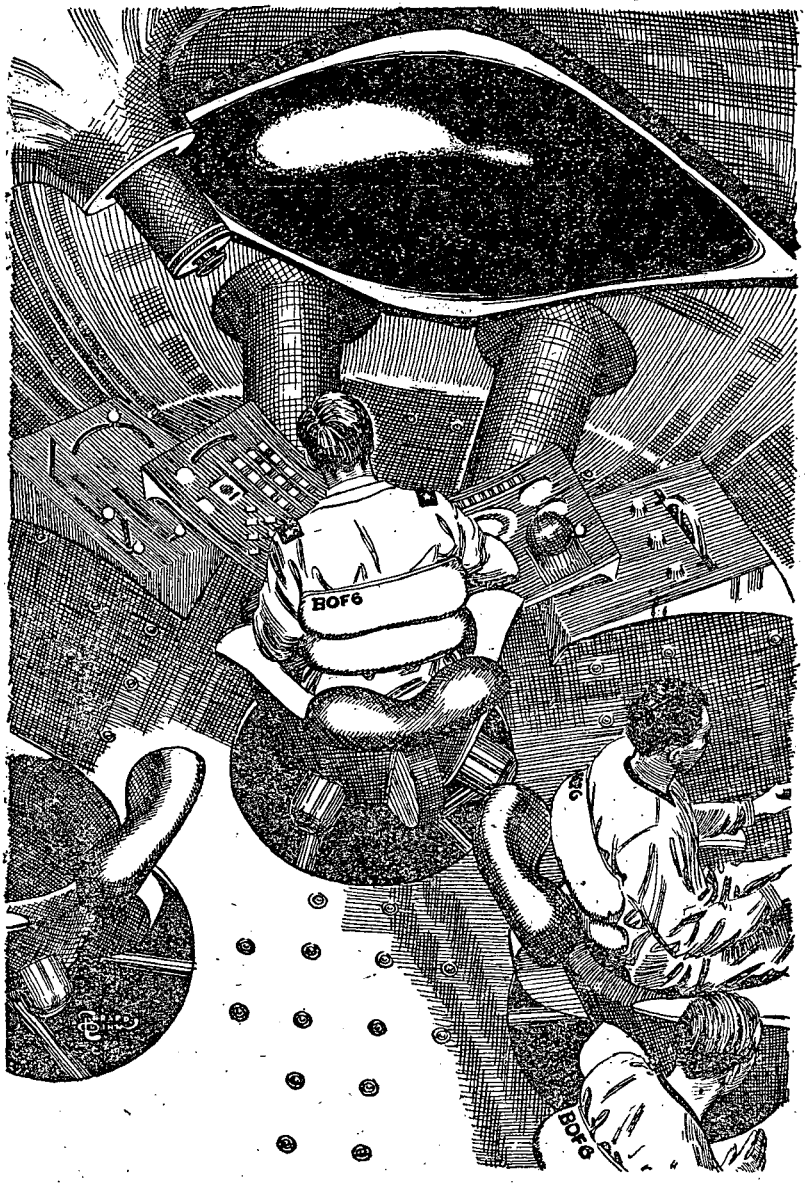

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In the July 1954 issue James White produced a very fine story dealing with doctors in space—"Starvation Orbit" pointed up the many problems besetting surgery under conditions of 'free fall.' The story which follows, while having no connection with that earlier one, produces some different problems for a doctor on board a spaceship.

BOARDING PARTY

By James White

Illustrated by QUINN

The blast ripped away the mouth of Number Six launching tube, together with a wide area of the ship's hull plating. Part of an underlying longeron torn free by the explosion—a twisted and ragged-edged I-beam fully twelve feet long—was blown downwards into the wrecked tube. Narrowly missing an already primed warhead, and without noticeably slowing speed, it battered its way through the fusing servos and crashed into the control chamber. Like a gargantuan javelin it shot unerringly towards the nerve centre of the room, an erect, metal ovoid that was the focus of a hundred brightly-coloured cables. The control pod's protective screen checked the hurtling girder abruptly, but could not stop it until the damage had been done.

As the twisted mass of metal was flung heavily away by the twenty gravities repulsion of the screen, a thick, oily, shock-absorbent fluid bubbled from the wound it had made in the pod's side. That, and a little blood.

Captain Cross said, "Grayson."

What, Grayson thought tiredly, *do you want me to do about it?* Aloud, he said, "Yes, sir. I see it."

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The destruction of Number Six, and the damage to the human-operated control pod showing on the Captain's master screen was duplicated on his own panel, and as ship's Medical Officer he knew his duty. Send a nurse either to patch up or transfer the casualty to sick-bay ; simple. But the simple answer to this problem was impossible, Dr. Grayson knew as he looked helplessly at nine tiny, yellow lights burning at widely-separate intervals on his control panel ; there wasn't a nurse available to send.

Nine lights, burning yellow to indicate that all were currently engaged on cases, when there should have been eighty !

There had been eighty just half an hour ago, before the *Starcloud* met the three Raghman ships, but since then his lights had been steadily going out. Dr. Grayson tried to think of them as lights going out, and not as whole sections of the ship wrecked, cut off from control and communication, or just cut off ; it was better for his mental efficiency if he did that. He found it very difficult to accept the fact that this, the invincible, indestructible, and a dozen more similar adjectives, super-battleship *Starcloud* was ninety percent wreckage, with the percentage increasing every minute. Judging by the stunned expressions on the faces of the three other officers in the control room, they were having the same difficulty.

No one had ever reported three ships acting together before ; usually the Raghman globes operated singly. Grayson was sure that the *Starcloud* wouldn't live to report it either.

One of the lights on his panel—Nurse 53—flickered from yellow to white, indicating that the nurse had almost finished with the current case and would shortly be free for re-assignment to another. Grayson forced the overall catastrophe out of his mind quickly, and narrowed its focus to concentrate solely on his job. 53 was working fairly close to the wrecked Number Six, so it might be possible to help the casualty there after all. He bent forward and flipped the switch that would link the nurse's vision pick-up with his main view-screen, and watched the treatment being completed.

The man had suffered fractures in both legs, damage to the lumbar vertebrae, and superficial lacerations on and around the affected areas. He was encased now in a sticky white cocoon from toes to chest, and as Grayson watched carefully, a needle drove into the crew-man's arm, injecting anti-shock and a sedative, and withdrew again too fast for him to see it. A fine spray played briefly over the cast, hardening it, then Nurse 53's light turned green. Treatment concluded.

Using direct control and never taking his eyes off the viewer, Grayson took the nurse immediately into a corridor leading towards the damaged Number Six. Nurse 53 had the fault common to all mechanisms.

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designed to do more than a few simple, specialised jobs—it was incredibly delicate. There might be obstacles in its path which the robot's built-in responses would not recognise as such, and there were too few nurses left for him to risk this one unnecessarily. He took a little of his attention from the control panel when Cross bent over him, but only briefly.

"Grayson," the Captain said quietly, "if that man is alive, I want him brought directly to the control room."

Cross always spoke quietly, and even at the height of the present battle he hadn't uttered a single unnecessary word. If there was a weak point in that tall, spare frame, it was microscopic, and a man would almost die rather than show weakness before him. During the engagement, when shouting and a certain degree of confusion would have been considered normal, he hadn't raised his voice once. And he was most economical with words. Grayson didn't expect an explanation for the completely unprecedented order.

"The man is Stuart," Cross said, "A Drive Engineer." He turned and began trying to co-ordinate the ship's four remaining fire-points against the nearest, but incredibly agile, Raghman ship.

Why, Grayson asked himself, should a casualty be brought here instead of to sick-bay? The fact that he was an Overdrive engineer didn't explain anything, at first. But the answer came to him suddenly, and for the first time since joining the ship, Grayson felt a little ashamed of Captain Cross.

The *Starcloud* carried life-ships, simple, reaction-driven shells that had neither the speed nor fuel-food storage capacity for instellar flight—but for one exception. Nearby, under a section of the hull as yet untouched by the Raghman force eddies, was a six-man lifeship equipped with the Overdrive generators which made speeds greater than light possible. Nobody in the control room, Grayson knew, had the necessary specialised knowledge to tune and operate those generators, hence the Captain's order to bring Engineer-Gunnery Officer Stuart here.

Cross was going to abandon ship.

Sometimes, Grayson told himself angrily, he thought like some dewy-eyed twelve-year-old. Captain Cross was the most valuable and highly-skilled scientist on the ship, otherwise he wouldn't have been its Captain. The romantic tradition that masters should perish with their commands had always been a stupid one, and in this present era it was downright criminal. Cross was duty-bound to save himself first, not last. Grayson knew this, but somehow, he still felt disappointed in the other . . .

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The control room seemed to jump as a shock-wave passed through it: another force-eddy had successfully penetrated the ship's defensive screen. Grayson bent forward anxiously. The picture being transmitted from Nurse 53 spun wildly as the nearby explosion sent the robot tumbling end over end. He sighed thankfully when the image steadied again and his panel told him that 53 was undamaged. But his relief was short-lived, because the clear, steady picture on his view-screen showed a section of the corridor along which the robot was passing. The farther end of the corridor—terminating in the control chamber of Number Six launching tube—had turned brown and was slowly caving in. The force-eddy had been very close indeed.

"Get it through! Quickly!" Cross was behind him again, his voice shockingly loud and harsh. "Maybe you can bring it back by a different route . . ."

"I'm trying," Grayson interrupted, "but it's going to be a tight squeeze . . ." He didn't have to tell the Captain that the squeeze would need to be a very loose one if the robot was to be of any use when it did get through. Nurse 53 was no bulldozer.

It was like living through one of those nightmares where everything is slowed to quarter speed. Slowly, as the robot's vision pick-up relayed it back, the image of the damaged end of the corridor expanded in Grayson's view-screen. Almost imperceptibly, yet far too quickly for the robot's safety, the ceiling and walls slumped and buckled under their own weight. As if the metal plating and bulkheads had been turned into so much soft, brown toffee, the ceiling rippled and bellied downwards and the walls tried to emulate a concertina. The secondary —softening—effect of the force-eddies produced no heat, but they were deadly enough without it.

The robot's vision pick-up was set low: Grayson found it hard to judge how much clearance he had. Four feet, he guessed desperately, which should be just enough to clear 53's power antenna. He sent it into the melted section of corridor at its snail-like top speed, praying under his breath as the walls—a sugary powdering of metallic crystals making them even more closely resemble candy—slid slowly past. The corridor floor was still solid and intact.

A sigh from Cross gently stirred the fine hair on top of Grayson's scalp as the damaged control pod containing Stuart came into sight, but it ended with a sharply-indrawn breath as the transmitted image jerked suddenly and slewed around, showing nothing but a buckled expanse of wall. It stayed that way for perhaps two seconds while Grayson's fingers tapped madly at his panel's control keys, then it went black.

"What . . .?" Cross began harshly, but Grayson was already answering him.

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"Both the power and vision antennae were broken off against the ceiling." Grayson nodded at his panel where the trouble was illustrated by lights which glowed and others which did not. "It can't use the power beamed to it, and it's blind as well."

"Batteries?"

"I used up the emergency batteries trying to get more speed out of the thing. Besides, there may have been other damage. I couldn't allow it to treat anyone now without direct supervision—its diagnostatic circuits suffer first if anything goes wrong."

As Grayson stopped talking he deliberately kept his eyes away from the Captain's face. There had been a strained, almost strident quality in the other's tone that made him wonder if the rock-like calm of the Captain was at last beginning to crack around the edges. There would be no escape in the life-ship without Stuart. Grayson didn't want to see the other's expression in case he would feel even more ashamed of Captain Cross.

All at once the utter hopelessness of the situation fell around his mind in a heavy, suffocating blanket of despair. It wasn't just the desperate plight of the ship, or his own imminent destruction alone that was smashing at what remained of his ego; it was the nagging sense of failure in his job, of things he might have done but hadn't, which could have diverted this latest disaster. If he'd been half the robotics man he was cracked up to be, he would have found some way of getting Stuart to the Control room. He hadn't, and now nobody would get out of this.

If the *Starcloud's* crew only knew what a fake he was. As he had done time and again before, Grayson told himself that as Medical Officer of the ship he was nothing but a second-rate G.P. with eighty assistants to do all his work—and ninety percent of his thinking—for him. True it required a certain aptitude to control and work through his robot Nurses, and not many doctors had that ability. But he wasn't really a doctor. Why, he hadn't touched a patient—directly—in over two years.

Without his robots, he probably wouldn't know how to start treating a case of measles.

The crazy humour of the whole business made Grayson smile bitterly to himself. Here he was, likely to pass out at any minute, and he was afraid to look at the Captain's face because o. the embarrassment a scared expression on it would cause him! Wryly he wondered if the look on his own face was one likely to inspire confidence in a subordinate. He didn't think so.

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"We're ready now, sir," said Harper, at the Ordnance panel. Cross, who had his mouth open to speak to Grayson, looked indecisive for perhaps a second, then moved quickly beside the Gunnery Officer.

"Be careful," he said, his eyes flicking across the pitifully meagre number of 'In Operation' lights on the panel, and coming to rest on the main viewer. "They mustn't suspect what we're doing." He didn't look or sound particularly scared, just anxious.

Grayson looked at the big screen, too. He had an idea something important was about to happen.

The nearest Raghman ship circled the *Starcloud* at a distance of roughly two miles, its two companions were five miles out. In he enlarger beside the big screen, it showed as an opaque, milky globe whose outlines shimmered faintly, giving the ship its characteristic appearance of fluidity ; a defensive screen, no doubt. As Grayson watched, a hazy bubble swelled rapidly on the enemy ship's hull, broke free, and came undulating towards them like some ghostly electric eel. A force-eddy. But it should be a few minutes before it would hit them—as a rule the eddies moved slowly.

The thought that this might be one of the exceptions to that rule was making Harper's forehead wet and shiny.

Cross said, "*Now* !"

In a ship that was nine tenths servo-mechanism, one became accustomed to seeing reality through a row of dials and a set of indicator lights. Harper's panel told him that launching tubes Three, Four, Seven, and Nine—the only four still linked to central control—had each expelled a missile simultaneously. It also told him that twenty 'sunlight' flares had been ferried up from the forward magazine and were now awaiting detonation on the outer hull. For a diversion of some sort, Grayson guessed. He watched the main screen closely as three of the missiles curved towards the two farthest Raghma, and the fourth shot at the ship which had so recently closed in.

Harper's finger tensed, and Grayson instinctively shut his eyes. The fl res ignited.

If the beings in the ship's had eyes, it must have looked as if the *Starcloud's* magazine's had gone up. But whether they had or not, it was hoped that the pyrotechnics would rivet the Raghman attention solely on the *Starcloud*, and not on what that ship was trying to do.

Instantaneously with the ignition of the flares, the three missiles heading towards the farthest Raghman ships split up, blast ng around in a tight semi-circle. Together with the one originally aimed at it, they went streaking towards the nearest Raghman ship. Their course

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and velocities had been pre-calculated and timed—they hit it from four different directions at once. Grayson shut his eyes again.

"And then," Harper said savagely, "there were two."

The Raghman ship had—gone.

A yell of sheer exultation from the Communications Officer—and Smith was usually the quiet, retiring type—was bruptly cut off as the temporarily forgotten force-eddy struck. The shock spun the standing Captain Cross to the floor and flung Grayson half out of his chair. He was wriggling back into his seat when the Captain, fingering a raw patch where his forehead had met the floor, struggled to his feet.

"They *can* be destroyed, then," he said, awed at the implications of his own words, and still half afraid to believe them. His disbelief passed and he went on excitedly, "The solution is to englobe them. That way they can't slide away from everything shot at them the way they always do. But for that we've got to lure them into short range, make them careless, get them looking the other way, then . . ." Cross looked at the fading bright spot on the big screen, and for the first time that day, smiled. ". . . Bingo!"

"However," he went on, thought lines creasing his brow. "The design of this ship is wrong for those tactics. What we need is a formation—or a flotilla of armed life-ships protected by the screens and fire-power of a larger mother ship might be better. We were successful this time because of a trick, a trick which might not work a second time."

Harper cleared his throat. "It won't," he said simply, nodding at his panel where two more sets of lights had gone out. The disruption of the last force-eddy had left them with just two launching tubes in operable condition. Another englobing attempt was out of the question.

The Captain's shoulders drooped. His long, boney frame seemed to sink in on itself. He turned his face away from the control room's occupants. "If I'd known," he said thickly. "If I'd known this sooner . . ."

Another concussion shook the ship, but Grayson barely noticed it. He thought he knew the hell that was in Cross's mind; he felt very sorry for the Captain.

During the opening minutes of the engagement, while the ship was still a powerful fighting unit, Captain Cross might have destroyed the whole Raghman fleet—and without resorting to trickery, either. But when confronted by the unknown in the shape of three Raghman globes hurling force-eddies, the natural reaction was to keep the un-

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known at arm's length by firing fast and furiously in return, and definitely not to allow it to approach closely. It wasn't until the *Starcloud* was a wreck, and no longer capable of keeping the Raghman ships at a distance, that the trick had been thought of. Grayson wasn't blaming the Captain for his fatal error in tactics. Nobody was blaming the Captain, except the Captain.

Cross straightened abruptly. His face and voice when he spoke were utterly devoid of emotion. He said :

" The position is this. We have information which may lead to us winning the Human-Raghman war, or at least holding out until something better is developed. But this data must reach the proper authorities. If it doesn't then this type of ship—the first of the Star Class super-battleships—will be written off as a failure instead of the potential success that it is.

" We have, for the first time, some analysis data of the Raghman force-eddy, details of the *Starcloud's* operating efficiency under fire up until it became nine-tenths a wreck, and we have an offensive tactic that has proved effective at least once." Cross's eyes moved quickly from face to face. " Suggestions, gentlemen."

Harper stirred restively. " What's the use ?" he said. " No matter what we decide to do, we'll need an Overdrive engineer. We haven't got one." He looked angrily towards Grayson's control panel, which was now completely dead, and then directly at the doctor. Grayson felt acutely uncomfortable.

Suddenly the Captain looked across at Grayson, too. " I wonder . . ." he said thoughtfully, then broke off.

Grayson knew what was coming.

He was afraid of dying. He was, Grayson admitted freely to himself, desperately anxious to prolong his life. And he was far from being among the first five in order of importance on the *Starcloud.* But the ship's officers had been so drastically thinned out during the battle that, if the Overdrive powered life-ship could be launched, he would be on it. But even more than of dying, Grayson was afraid of dying while making a complete and utter fool of himself.

On the *Starcloud* an officer's leisure time was his own. But while Harper, Smith, and the rest of the commissioned men used theirs to climb all over the ship, or to play hectic ball games in gravity-free sections, Grayson had stayed in his cabin, listening to his music tapes or studying up on the latest techniques in handling medical robots. He had never been a good mixer, and he was, he more than suspected, bone lazy. The end result of this was that he knew practically nothing about the geography of the ship, he was as weak as a woman, and he had only a rudimentary knowledge of how to handle himself in a

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spacesuit. And add to all that the fact that he hadn't had direct contact with a patient in two years. Grayson knew what was coming, all right, and he knew that he wouldn't do what would be asked.

"Dr. Grayson," Cross said evenly. "Any hope of escape we have hinges on Second Engineer Stuart. Would you go personally to him, treat him, and bring him back here."

Grayson couldn't speak. His neck muscles seemed to be paralysed, too, because he couldn't even shake his head. Cross's eyes bored straight through to his soul, stripping away the flimsy layers of camouflage with which he faced the world, and revealing him as the coward and faker that he was. The silence seemed to last hours while he struggled vainly with his vocal cords, but it could only have been a few seconds.

"It's a very unusual job for you," Cross went on. His voice remained emotionless, but there was a brief gleam of sympathy in his usually cold grey eyes—and of understanding, and reassurance. "However, I know your ability, Doctor. You'll be able to do it."

Grayson got his voice working enough to croak, "I'll try, sir." He felt surprised, and strangely pleased, that he'd been able to say those words instead of a panicky "No!" As well as his other accomplishments, Cross was quite a psychologist, too.

"Very well," the Captain said, still in an almost off-hand tone. "Harper will help you into the suit. Connect your phones to a reel of cable and pay it out as you go. That is the safest way to keep contact with us now that the ship's intercom system has fallen apart. When you reach Stuart—"

"*Captain*!" Smith's warning shout cut him off in mid sentence. "Force-eddies—six, seven . . . no, *nine* of them! That ship we blasted must have flung them off just before we got her." His eyes swivelled wildly between Cross and the ghostly, undulating images on the screen. He was sweating.

It must have taken a superhuman effort for Cross to avoid looking at the screen, and to keep his voice at a conversational level as he ended, "We haven't a lot of time, Doctor. Be as quick as you can."

Grayson was outside the control room, plugging his suit phones into the socket in its airlock, when the force-eddies struck. From his position flat on the heaving and shuddering floor he saw the section of the corridor leading sternwards twist crazily and bend upwards, so that only about twenty yards of its length was visible. A brief gale whistled through the corridor, subsided, and the fabric of his suit creaked and stretched outwards; the air had gone. He re-checked the control room airlock seals, then began moving quickly towards the ship's prow, and Stuart.

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He ran into trouble almost at once.

One moment he was half running along the corridor, the next he was threshing about above the floor, weightless. Eventually he made contact with the wall, and continued on his way by pulling himself along a section of the ship's plumbing. He got about ten yards when a great, invisible hand flattened him viciously against what should have been the ceiling, and held him there. Sheer panic made him shout for help, but then he calmed quickly as he realised what must have happened. Luckily the suit transmitter had been switched off, so nobody knew about his bright blue funk. Switching it on, he said: " Grayson to Control . . ." and rapidly described his predicament.

The radioman's voice sounded, relaying a more technical version of it to Cross, then Smith said: " We're going to cut artificial gravity in this whole section. The Captain says it will be safer for you that way. 'Luck, Doc. Off.' "

Grayson's stomach heaved as the three G's pinning him to the ceiling disappeared. He continued along the corridor, weightless.

He knew what had happened, of course. The matching grids that supplied an Earth-normal gravity to the human-occupied sections of the ship—the robot-worked sections didn't require it—had suffered whole or partial power failure as damage to the ship increased. The grids needed a lot of power, and were delicately balanced, or the strength of their artificial gravity fields became wildly erratic. Grayson had just had an object lesson of that.

It was a modification of the gravity grid that produced the *Starcloud's* defensive screen. That screen was impervious to all known forms of radiation, and if attacked by a solid body, it automatically brought to the point of contact a repulsive force of nearly one thousand gravities. If it was attacked at two or more points simultaneously, then the repulsive force was halved or quartered as the case might be. The Raghma ships had been quick to discover that particular weak spot in the *Starcloud's* defence; sometimes their force-eddies had come five at a time.

But even if the ship had been able to keep its defence screen intact, Grayson knew that the *Starcloud* could not have held out for very long. Those screens used power at a fantastic rate—power which was strictly limited despite the ship's size. And Cross, unfortunately, was no Dunstan.

Almost, Grayson forgot his deadly danger as he remembered the excitement that the Dunstan report had caused throughout the Force—excitement which had rashly made him leave his safe and comfortable

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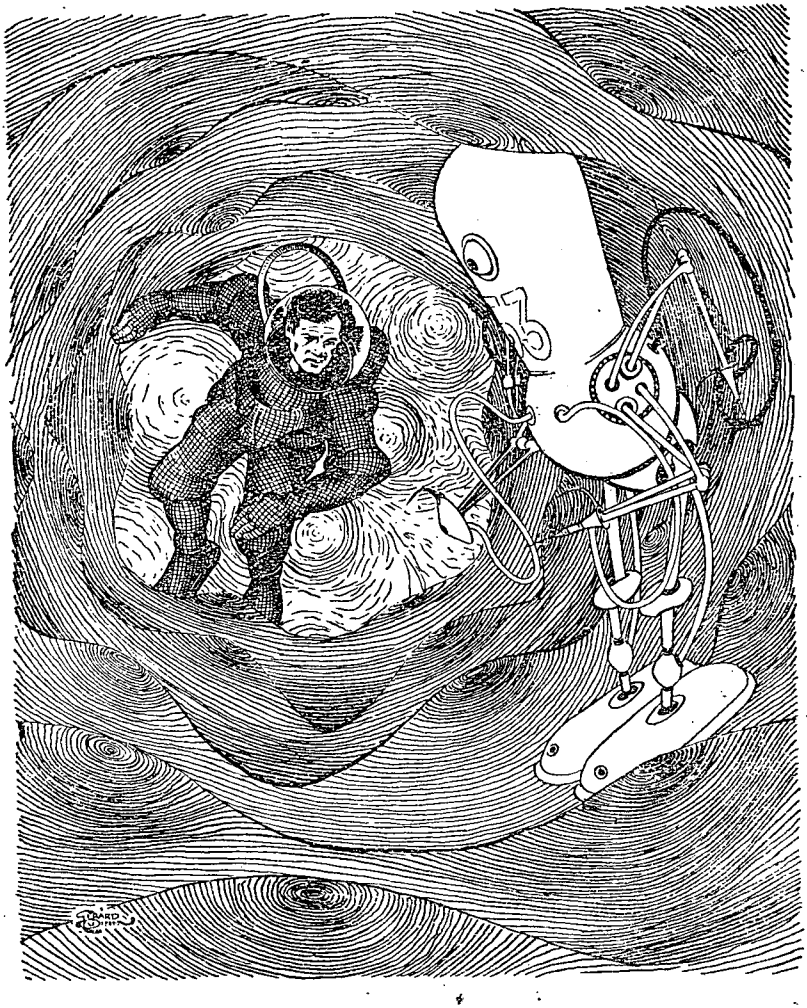

Base Hospital and apply for ship service. Captain Dunstan, surveying in Secant 18 when an accident to his main power pile forced him to jettison all atomic fuel, had found his ship being drawn in and not so

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slowly baked by the powerful gravity-pull and unbelievably lethal radiation of a nearby White Dwarf. He had been in a very bad spot until the ship's astronomer found a planet circling that White Dwarf sun—a planet with a most unusual composition, for spectro-analysis showed that its crust was almost covered by deposits of a radio-active isotope similar to the one used to power the Overdrive generators of Dunstan's ship.

By a miracle of piloting he had been able to land on the planet using his small store of chemical fuel, and while the crew huddled in the deepest and most heavily shielded compartment of the ship, remote-controlled robots had collected enough radio-active fuel for the trip home. Before the planetary and solar radiation had penetrated too deeply into his ship, Dunstan had been able to take off and return with the news.

Immediately everyone wanted to investigate Dunstan's planet, and to search for more like it. But then the Raghman war came, and the patrol and survey ships had been ordered in for refitting. Missile launching tubes and repulsion-screen grids replaced the telescopic mountings and the forest of search antennae, and fuel could be obtained more easily—though admittedly at greater expense—on planets other than those circling White Dwarf suns.

Grayson came to an intersection and turned into the corridor leading to launching tube Six, cautiously using the ruined communications plumbing to pull himself along. With gravity shut off, the danger of ceiling or walls collapsing wasn't so great. But though the metal now had the strength and consistency of soft putty, it retained all its weight and inertia, and could quite easily squash him flat by sheer momentum. He looked sickly at the brown streaks and patches on the once-bright metal walls, and he used the dirtiest word he knew.

The Raghman war.

Nobody knew why they had started the war, or even what a Raghma looked like. A white globular object had appeared suddenly over the planet of Clellane IV, and without warning or provocation had loosed a force-eddy which sent the ship coming to investigate it crashing back to the planetary surface, a softened, shapeless hulk. The globe didn't enter atmosphere, but remained in space viciously and insensately melting every ship which tried to take off. All sorts of weapons were tried against it, but the globe avoided the solid missiles aimed at it with an agility that was unbelievable, and it ignored radiation completely. It had only one offensive weapon, the ghostly, flickering force-eddy. But that one was plenty.

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In the Clellanian tongue the word for the Spectre of Death was 'Raghma.' The name had stuck.

Some of the ships fired on by the Raghman globe had fallen into orbits instead of crashing, and investigations carried out after the raider had departed showed that some of them were not completely melted. But their occupants, though outwardly unharmed, were dead. Diagnosis said a burnt-out nervous system due to some subtle form of electrocution.

As more and more planets of the civilisation that was beginning its spread into the galaxy suffered similar raids, Earth and its colonies—who were the technological arm of that civilisation—soon knew that their backs were to the wall. The Raghma seemed completely disinterested in ground targets, but every ship entering or leaving the atmosphere of the planet under their surveillance that they could reach was hit with at least one force-eddy, and that was that. Massed attacks had no success either; before the Raghman globe came within range of Earth-weapons that probably would not have worked anyway, the attacking ships became just so many menaces to navigation. Offence was futile, but if a defensive weapon could be found that would give Earth a little time to work something out, then there might be a chance. The scientists were bound to come up with something.

Starcloud was a last, desperate try for the answer. A great torpedo half a mile long and six hundred feet in diameter, only sheer luck had kept the Raghma from finding and destroying it during its fabrication while in orbit around Earth, and such luck was unlikely to hold for the half-completed sister ship if a defence against the force-eddy weapon wasn't found. But the *Starcloud* had a defence, of sorts.

The repulsion screens which gave protection against meteorite collisions—standard equipment on most ships—tended, it had been found, to slow attacking force-eddies down to a certain extent. The *Starcloud* had been designed for the purpose of coming to grips with the enemy, defending itself until an analysis of the force-eddy weapon could be obtained, and then high-tailing it home with the news if the going got too tough. Its repulsion screen, and the generators backing it, were on such a gargantuan scale that many of its builders had loudly abhorred such a frightful waste of material, never doubting that it would be a complete success.

But *Starcloud* had met three Raghman globes. The Overdrive engines, its means of running away, had gone during the first minutes of the engagement, and its super-efficient repulsion screen just wasn't.

To Grayson, drifting weightless at its centre, the corridor seemed to shudder in annoyance at his invasion of its privacy, and a section

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of plating came free and drifted slowly away from the wall. He caught at it, pushed backwards, and used its reaction to increase his speed along the corridor.

"Three eddies hit us, sir." Harper's voice in his phones sounded puzzled. "The other six are just hanging alongside, not even trying to get through the screen."

Cross's voice in reply seemed almost absent-minded. Grayson could imagine him studying those drifting force-eddies, his incisive intelligence backed by all that remained of the ship's analysing equipment trying to solve the problem that they represented. "They came from the ship we blasted, remember," the Captain said. "Possibly they require direction from a mother ship, and may now be harmless."

Harmless !

Grayson didn't agree with that at all. In the control room he had seen the force-eddies come boring in, being flung back by the repulsion screen, only to come boring in again. He had watched the screen, overloaded by similar attacks at several other points, weaken for an instant, and the eddy make contact with the bare hull. Three things happened then. There was a flash of cold, blue light, and an explosion that occurred somehow without the heat or radiation normal with a chemical or atomic reaction which peeled off an area of hull plating and smashed in the structure underlying it, then, a few seconds later, the metal around the site of the explosion lost the molecular binding force which gave it strength, and turned brown. The softening penetrated deeply into the ship, but in a seemingly random manner that often left one wall of a room intact while the others were a soft, brown mess.

Ninety percent of the *Starcloud* was now in that semi-fluid state, and the consequent unbalance set up by its repulsion screen was slowly pulling the ship apart.

But the overall state of the ship wasn't Grayson's concern at the moment—just the condition of this particular corridor. Corridor, he thought grimly, was scarcely the word for something resembling the digestive tract of some monster reptile. with bulges and convolutions of walls and ceiling that pressed lower with every yard of progress he made. Though weightless, he was forced almost to crawl under that sagging, distorted ceiling, then he was actually wriggling and squeezing his way under it. Grayson was awfully glad that he had never suffered from claustrophobia . . .

Suddenly he was whimpering, and pushing and struggling back the way he had come. The thought of that awful mass of metal above him—hundreds of tons of superheavy jelly—with only the absence of gravity preventing it from squashing him like a bettle under a steam-

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roller was too much for him. Grayson wanted out. He didn't care what happened to the ship or Cross or anybody, just so as he could be where he could stand up, or even kneel down without drowning in leaden waves of metal.

But he couldn't return. At least, not backwards. In an hysterical surge of panic he arched his back, madly trying to lift the whole mass of settling metal by sheer muscle power. But harsh scraping sounds on the fabric of his suit—warning of the danger of puncture—returned him to a measure of sanity. He wriggled forward again, hoping desperately to find a spot wide enough for him to turn around.

He found it where the disabled Nurse 53 was propping up the corridor ceiling, but beyond the damaged robot he could see the entrance to Number Six, and Stuart's control pod.

". . . What's happening down there, Grayson? *Answer me*!" It was Cross's voice in his phones. The Captain must have been talking for some time without him realising it.

"The roof was coming down on me," Grayson replied defensively: then he thought in sudden self-loathing, *you're a low, yellow coward, why be a liar, too?* He ended awkwardly, "At least, I thought it was."

Cross said, "I see."

Hastily Grayson told of his position near Stuart's pod, adding that it would be impossible to bring the engineer back along the corridor. Had the Captain any ideas?

Cross had a lot of ideas, but they all hinged on Stuart being alive and well enough to run the life-ship. Therefore Grayson had better make sure Stuart was all right before he worried too much about getting him back to the control room. If the engineer was alive, an escape method had been worked out which stood a good chance of success.

As Grayson worked his way around the white enamel and chrome wreck that had recently been a functioning robot nurse, and kicked out towards Stuart's pod, Cross told him what that method was to be.

The bright-eyed, romantic, hero-worshipping Grayson did not approve of the idea at all. But the Grayson floating in the debris of a wrecked ship, scared silly, and—melodramatic as it was—with his unpractised hands and unsure mind possibly the only hope for the survival of his race, thought a little more realistically. The second Grayson, however, didn't completely approve of the idea either.

Briefly, a heavy charge of chemical explosive would be used to blow the stern section of the *Starcloud* apart, flinging out an expanding sphere of wreckage to the six corners of space. Unknown to the Raghma one of these chunks of debris would be the escaping life-ship. A

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few seconds later the *Starcloud's* remaining store of nuclear weapons would fission simultaneously, thus making it impossible for the Raghma to trace the fleeing life-ship even if they had been able to detect it among the wreckage. The Raghma would, it was hoped, be dead.

Grayson tried not to think of the crew-men in the stern section who, though cut off from central control, still managed to launch an occasional missile against the enemy. Or of the hundreds who had been taken to sick-bay there. Grayson was, after all, a doctor.

Then why, he asked himself viciously as he bumped gently against the damaged control pod, *don't you start proving it*?

The wound torn in the leaden walls of the pod by the flying I-beam had sealed itself automatically with a smooth, transparent plug of hardened shock-fluid: as well as giving protection as a shock-absorber, it acted as a self-sealing mechanism should the pod be punctured while in a vacuum. But the transparency of the seal was spoiled by cloudy red streaks. Grayson, greatly aided by the absence of gravity, pulled a section of the pod's lead shielding aside, uncovering a clear-plastic inspection panel. He looked through it at Stuart.

It was hard to get an accurate idea of the Engineer's condition, because the skin-tight suit in which he floated while inside the pod had been torn in the region of the wound, and his body temperature plus dilution by blood had made the fluid a soft red jelly instead of the clear, rock-hard cement it normally became when exposed to cold or vacuum. From what Grayson could see, he thought that the metal beam had struck somewhere below Stuart's right arm-pit, gouging a small piece out of the arm and probably fracturing the humerus. Possibly there were a couple of ribs gone, too, but as there was no blood around the man's mouth, they could not have damaged his lung. His breathing was quick and shallow and he had lost a lot of blood. The case wasn't a complicated one, Grayson knew, nor should it prove fatal provided treatment was given promptly.

He reported his findings to the control room.

Cross gave an almost explosive sigh of relief. "Good," he said. "Get him out of that pod, Doctor, then take him through the launching tube directly to the outer hull. About two hundred feet forward of the tube's mouth is the life-ship blister. Take him to it and into the boat. We'll be there then or a few minutes later." The Captain paused, then finished urgently, "Get him fixed up quickly, Doctor. But be careful, too, he's our only hope."

It was only as Cross was speaking that Grayson realised the utter hopelessness of trying to treat Stuart. Funny how it was the most obvious things which were overlooked first, he thought; like the simple

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fact of the control compartment being open to space. To help the engineer he would have to remove the other from his hermetically sealed pod, and take off at least part of his own space suit to have his hands free. But doing those things in a vacuum would result only in the rapid demise of both doctor and patient. He ground his teeth in anger and sheer self-disgust at his stupidity—temporarily forgetting the awful responsibility he carried—and again reported to the control room.

Cross said, " That's bad, Doctor."

That's bad, Doctor !

Grayson was suddenly very sick of the Captain's cold, emotionless voice and his infuriating habit of understating everything really important. And he was sick to death of officers who contemplated the destruction of their friends with steady hands, impassive faces, and crisp, military voices. He said, " Listen . : ." and with expletives he had heard and some he must have read somewhere, he began to qualify the badness of the situation. He spoke for several minutes.

" I agree," Cross said drily when he had finished. " But is there nothing you can do ?" He hesitated, then went on, " You're the man on the spot, Doctor. You'll be able to think of something, I know you will." His voice had a pleading, almost cajoling note in it which wasn't characteristic of the Captain at all. It puzzled Grayson, but not for very long.

Cross and the others were depending on him to patch up Stuart in order to escape, Grayson knew, and now they must be beginning to wonder if they weren't leaning too heavily on a rotten stick. His crying fit back there in the corridor, and now this latest and downright mutinous outburst to the Captain had them worried. Suppose Grayson had, or was about to, flip his lid, go mad ? He'd need very careful handling if they were to make use of his medical ability, and that was the reason for Cross's tone. The Captain was trying to humour him !

The idea of that made Grayson very angry. He opened his mouth to loose a second verbal broadside, but then he began to think about the responsibilities that Cross had—chief among them the one of getting the data home which might at last enable mankind to hold out against the Raghma. His anger died and was replaced by a feeling almost of pity. He didn't blame the Captain for his attitude; if Grayson *had* been on the verge of madness, it would have been exactly the right attitude. Cross was all right.

But the problem of getting Stuart to the life-ship was his own. There must be a solution, Grayson knew, because this type of accident must have occurred, and been solved, before. If he could only steady his jumping nerves enough to *think*.

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He had solved a similar problem less than half an hour ago, he remembered suddenly, when the forward observation blister had been holed. The man—injured but space-suited—had been treated on the spot. Grayson had rushed two Nurses to the blister and had them spray their quick-setting plaster over the hole in the glassite, sealing it and allowing air pressure to return. The stripping of the casualty's suit and subsequent treatment had been simple. He had felt rather pleased with himself over that one.

Grayson couldn't use that solution now, though because the hole in the wall of Number Six was four yards wide, not six inches, and even if Nurse 53 had enough plaster compound to seal it, the robot was jammed tight under several tons of metallic treacle and so couldn't be used. He tried desperately not to think of his surroundings, and only of the problem. The sort of problem, Grayson told himself as calmly as he could, with one of those disgustingly simple answers that might be shot at you during your periodic refresher course. Not the desperately urgent, life-or-death-for-millions type of problem at all, but just a problem.

Suddenly he had it. Moving quickly to the stoved-in wall of Number Six's control chamber he looked up along the tangle of wreckage inside the launching tube. Through it Grayson could see a patch of black, star-studded space. He switched his suit radio to 'transmit' and began to speak rapidly.

"How long will you need, Doctor?" Cross asked quickly when he'd finished. There was almost hope in his voice.

"About fifteen minutes."

"Right. We'll meet you at the life-ship in fifteen minutes," Cross said briskly; then: "Harper has already left for the life-ship blister, Smith is following now with the data tapes. I'll stay here for a while in case they spring something new."

Grayson grunted acknowledgement, and hurried into the corridor containing the imprisoned Nurse 53. He felt uncomfortably like a cannibal as he ripped into the sleek white-enamelled hide of the almost human robot—one of the very few mechanisms, he thought sadly as his eyes passed over the bright red cross painted on its side, that was specifically developed to *save* lives. The hypos and other instruments which he would need were not designed for human use, of course, but Grayson thought he could manage—Stuart wasn't, after all, a very intricate case. He rifled several of the robot's compartments, then wrapped the loot in some cotton and gauze found in another. He returned to Stuart.

The engineer looked really bad now. Grayson softened a small area of the cement above Stuart's shoulder, inserted a long needle,

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and deftly hardened it again before the air pressure could blow it out. He fed in glucose and anti-shock, then withdrew the needle slightly and squirted in coagulant to halt the flow of blood still coming from the wound. Until he got the man into the life-ship it was the best he could do, but he was very much afraid that it wasn't enough.

Grayson switched on the self-powered cutter used for freeing injured men from metallic wreckage—also torn from the corpse of Nurse 53—and started slicing through the cables and structural members holding Stuart's pod to the floor.

The pod under Earth-normal gravity would have weighed easily a ton, and though weightless now, it retained all its mass and inertia. Grayson was hot and sticky inside his suit from his exertions, but he

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finally got it moving towards the gap in the wall. As it drifted ponderously through the breech section and into the tube proper, he bit his lips with sheer impatience. But then he realised that its great mass was really an advantage, because the pod cleared a six-foot tunnel through the loose wreckage which sometimes blocked the tube. Grayson had nothing to do but hold onto a piece of trailing cable and be towed along.

As they neared the end of the tube, Grayson wriggled ahead of the pod and began trying to slow it down. He didn't want it to drift completely off the ship.

A few yards from the tube's mouth he had it almost at a standstill, and began climbing up for a preliminary look at the condition of the ship's hull between him and the life-ship blister. Suddenly *something* began dragging him upwards.

Grayson grabbed desperately for a beam, then jammed a leg between two others and twisted around to lock it in position, bare seconds before his hand-grip let go. The suit and his leg, he thought sweating, should hold for a few seconds. He yelled: " *Captain* ! *The screen* !"

Abruptly the force trying to tear him off the ship vanished.

Stupidly, Grayson had forgotten the *Starcloud's* repulsion screen. That screen was designed to throw back any material object trying to make contact with the ship's hull, and when Grayson had come too close to the hull it had naturally tried to fling him off the ship, too. Cross had cut the screen now, but that raised another problem. From now until they took off in the life-ship, the *Starcloud* had no protection whatever against the Raghma.

" I'm leaving now," Cross said suddenly, his voice sounding strangely husky. For the first time Grayson realised how the Captain must hate losing his ship. " Everything is rigged for the getaway," he went on, " so there will be no contact between us until we meet you in the life-ship." With bitter formality he ended: " Control to Grayson. Off !"

A few minutes after the final click in his phones, Grayson had Stuart's pod out on the hull. He took another quick look at the engineer, and felt suddenly cold. Stuart's condition frightened him. The man had been in deep shock for far too long.

Despairingly, he dragged his eyes from the engineer and tried to orient himself. Stuart might never live to reach the life-ship, much less take it into sub-space, but while the slightest chance of success remained, he must exert maximum effort to get the man to the boat. He had to find it first, however.

From the indicator panels back in the control room, Grayson knew how badly the ship had been hit. But the actual sight of what the force-eddies had done to the *Starcloud's* half mile of silvery hull made

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him feel physically ill. The whole ship was a brown, twisted mess. Its once diamond-hard shell was creased and buckled into folds that were sometimes twenty feet deep. During the battle there had been local failure of the repulsion screen, and the resultant unbalance together with the already well-advanced softening of the hull, had warped the longitudinal axis of the ship into a sharp arc. It was wrong —horribly, shockingly *wrong*—that this mighty torpedo of plastic and steel and super-hard alloy should end a soft and shapeless blob. It wasn't a fitting end for such a ship.

There came a flash of blue light as a force-eddy touched the hull a quarter of a mile away. Grayson flinched, but the softness of the intervening hull cut the shock-wave down to a faint tremor. A section of the screen flicked into being on the stricken area—due to short-circuiting by the explosion, probably—and rapidly twisted the hull still further out of true. But there was a force of one hundred gravities pushing against that part of the hull, and no opposing force to balance it. Grayson saw the hull beside the screen twist and writhe and stretch, then the whole section—fully one quarter the mass of the entire ship —tear free and flick out of sight.

He turned around quickly. Just before it had gone he had been able to identify the Overdrive grids, so the departed piece of ship had been the stern section. The life-ship was forward, therefore, in the other direction.

About two hundred feet away a silvery bulge showed above a ridge of softened metal, which he had missed on his first look round. It could only be the life-ship blister. Grayson had to get to it as quickly as possible, and dragging Stuart's pod along as well. But the hull between was an expanse of brown fudge, relieved only occasionally by small bright patches of metal where the secondary, softening effects of the force-eddies had bypassed. His magnetic boots would not work on the soft stuff, and the hard patches were too far apart to serve as stepping stones. And it was a lightweight suit he was wearing, too, a type not fitted with a reaction motor. How was he and the massive pod going to get there?

If he could get something solid enough to prop himself against, Grayson thought suddenly, the trick he had used coming up the launching tube should work. He looked around. A few yards away the grey stump of a girder poked out of the tube's mouth; hard stuff. Though his nerves were jumping with impatience he carefully nudged the pod over to the protruding metal, lay with his back to it and his feet braced against the pod, took careful aim, and pushed.

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Stuart's pod drifted slowly towards the life-ship blister. Gently, so as not to divert its course, Grayson launched himself after it and caught one of the trailing cables.

He had a very bad moment as the top of the ridge of soft metal approached, but they shaved over it without touching. If the pod had hit and caroomed off, Grayson knew, they would have bounced away from the ship and would have been unable to return for hours, if ever. But his aim—either by luck or good judgment—had been good. They would hit the blister on the nose.

The thought made Grayson laugh nervously. Hitting the blister on the nose, indeed. Suppose the blister objected and hit him back . . . A wild, surrealistic cross-talk started in his mind between the blister and himself. He knew it was crazy, but it kept him from thinking of the more realistic and unpleasantly deadly things. But one unpleasant and deadly thing obtruded itself suddenly: a Raghman force-eddy.

A grey, ghost-shape of twisting, luminous fog, it was drifting about twenty feet above him. Then he saw that they were all over the ship. With the screen shut off they had been able to approach the ship unhindered, and there were dozens of them. As if wafted by some etheric breeze, they curled and writhed sometimes to within a few feet of the hull. Cold sweat broke on Grayson's spine as he thought of what they could do if they made contact with it. He looked quickly towards the blister, and saw another force-eddy over it.

Probably his last sane thought was that he need not worry about Stuart if the life-ship was going to blow up in his face.

It was a strange feeling, to go insane. He knew why he had gone mad, of course; there were lots of reasons. A personality that wasn't properly adjusted in the first place, and then forcing himself to play the part of a hero—a horrible piece of mis-casting that had been. Then there were those traumatic experiences in the corridor and tube, culminating in this one where he was closely surrounded by things which went very violently bang. But did all madmen, he wondered, have such a sane and objective understanding of the process.

First of all the thoughts began *roaring* through his brain. Even the small, unimportant half-thoughts shouted and screamed inside his skull—like a sound receiver mistakenly switched on at maximum volume—with such savage power that he expected it to blow itself apart. Then he began seeing things, together. A distorted picture of his father that was a blaze of blinding incandescence, yet simultaneously he saw the dim outline of the blister, made hazy by the force-eddy now drifting ahead of him, growing steadily larger.

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Suddenly every muscle in his body began to twitch, then to tie itself in an agonising knot of cramp. The involuntary muscles were affected, too; all sorts of unpleasant things happened, and he had to force himself to breathe. He felt as though he was being brain-washed, with acid. Through the pain Grayson recalled how some of the Raghman victims looked—their contorted, burnt-out bodies, dead by some weird form of electrocution . . .

That Raghman force-eddy might not be ahead of him. *Maybe he was inside it.*

The physical and mental agony was too much. Grayson wanted desperately to die. The only thing that kept him hanging on was the sudden realisation that the force-eddy was not a Raghman weapon at all, but an entity trying to communicate with him.

The Raghma, a highly sentient and organised life-form composed of pure energy, were waging a preventative war on the Human race. Its cause was the landing of a human ship on a planet circling a certain White Dwarf star which the Raghma used as a 'breeding' ground. Such interference could not be tolerated, and the Humans, it had been decided, were to be warned off, blockaded from space, or simply exterminated. Because the Raghma were, in their own fashion, a highly civilised and ethical race, the first of these alternatives was considered preferable. But there was a communications problem.

The globes had been merely a number of Raghma linked together in visible form in order to give the Humans something to focus their minds on. The Humans could not understand this as a means of opening communications, and so individual Raghma—force-eddies—had tried to make direct contact. The results of these Raghman boarding parties had been disastrous for the humans and unsatisfactory for them. They could not judge the power of their thought-probes through the metal hulls with enough accuracy to keep from burning out the nervous systems of the humans, and when they 'softened' a way into the ships, decompression or secondary radiation set up in the metal of the men's spacesuits also had fatal effects. The Raghma could not enter a planetary atmosphere, so it was not until Grayson had gone out in a lightweight, practically all-plastic suit that direct telepathic contact had been possible.

But the Raghma were growing impatient. Unless the being Grayson could successfully warn off his race from meddling with the planets circling certain White Dwarf stars, they would use the third alternative. There were ways known to them which could wipe out all life on any planetary body . . .

Grayson, his mind still quivering under the mental man-handling of the Raghma, thought despairingly of the specialist knowledge

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necessary to tune Overdrive engines, and of the man dying in the pod beside him . . .

It took only three minutes for him to reach the life-ship blister, though he felt he had aged years on the way. Then he was inside taking off his helmet, and Stuart's pod was collecting frost on the floor. Nobody moved towards it; they were staring at him, white-faced. His eyes especially, Grayson knew, were not nice to see.

" The war," he said harshly, " is over."

The wreck of the *Starcloud* shrunk rapidly in the rear-view screen, then dissolved into greyness as the life-ship shot into Overdrive. Captain Cross cleared his throat.

" I believe you, Doctor," he said, then went on thoughtfully, " but I don't think we should report it yet. This thing will have to be told—carefully."

Yes, Grayson thought. The human race had at last hit something that was too big for it. But the news that they weren't the dominant life-form among the stars had to be edited a bit, or a racial inferiority complex could well bring all human progress to a halt. Just as Grayson himself had held some of the more soul-destroying facts about the Raghma from Cross and the others. He hadn't wanted to tear the props away from their safe, comfortable philosophies in the way that contact with that Raghman mind had done to his own.

He glanced across to the Engineer's panel, where Stuart, his shoulder and arm tightly bandaged, was smoking. The Raghman entity, seeing, as it had put it, that Stuart's life force was practically non-existent, had, as a friendly gesture, replenished it. The Engineer had climbed out of the pod himself.

Grayson knew that no matter what message Cross sent, it would be worded so that no further trespassing would occur. Dunstan's planet and all others like it would be left strictly alone. The war was over. But he wished fervently that he hadn't learned so much from that force-entity—living with that terrible knowledge, his life would be a constant nightmare. Or would it? Some of the more unpleasant items were already becoming fuzzy round the edges. By the time they reached home, he would probably be believing much the same story as he had told to Cross and the others. He laughed.

Humans had a psychological defence mechanism, that of selectively forgetting things which were unpleasant to them.

Either that, or Grayson had met a very kind and thoughtful Raghma.

James White

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The story which follows is one that breaks one of our strongest editorial taboos — that of current world politics coupled with the threat of atomic war. But Mr. James has handled the theme in such a delicate manner that for the first time in some years we felt inclined to break with tradition.

WORLD DESTROYER

By E. R. James

Illustrated by HUNTER

"No, sir. Not you. We cannot take the risk of your falling into the hands of a potential enemy."

Gerard Pennington halted. His greyhound thinness showed through his loose tweed coat as he twisted around to look back at the speaker. He blinked. People were for ever surprising him. "Oh. But at least I can go with him as far as the plane, can't I?"

"Well, yes. If you wish."

"I do." Gerard nodded and walked out into the darkness.

Alan Lister made room for him on the back seat of the landrover. Lights around them were snuffed out and they moved forward.

As their eyes became accustomed to the faint light from the overcast sky, they saw the scattered lines of bombers, like great birds of prey, waiting to leap into the sky.

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The drumming of heavy tyres upon the concrete was the only sound. The driver and special service man scarcely moved in the front seats. It was as though their slightest movement might shatter the waiting silence of the night.

Gerard Pennington, too, sat still, his unique mind a blank. Alan could think of nothing to say. Somewhere, thousands of miles away, Gerard's sister, Rosa, probably sat just as still.

Indeed, the whole world of man was waiting. Tension held sway everywhere. Alan could feel it pressing in from all directions—except from Gerard's mind.

Gerard was completely lost in bewilderment.

And Gerard Pennington was one of the atomic physicists directly responsible for the latest bombs.

With a faint screech of tyres, startling on that silent aerodrome, the landrover halted.

Light spilled out of a plane's side.

As in a dream, Alan shook the hand Gerard held out to him. There was nothing to say. He climbed the ladder, glimpsed the huge triangle of the wing and was swallowed by the fuselage.

"Sit here, sir," said a man in light blue.

Engines screamed and they climbed smoothly into darkness like muffling wall.

Alan's mind drifted back into the past. For the past held the key to the future . . . . if there was to be a future.

But the past seemed an unreal world, like a nightmare fairy story that began: Once upon a time there were three boys, all of them unusual.

There was Gerard Pennington with the perfect scientific mind: the best centre forward ever to captain the school team.

There was Devlin Storm, clever but too hasty—always too hasty: the team's unbeatable but impatient right half back.

And there was himself, no genius, suffering agonies of self-consciousness because of awakening telepathy: right winger, always just where he was wanted on the football field.

A strange trio, invincible when playing soccer, friends until one evening . . .

"A single hydrogen bomb, of 200 tons weight, suitably seasoned with cobalt, would cause a radio-active dust cloud big enough to kill almost every living thing on Earth!"

Alan Lister, standing in the doorway of the Pennington's sitting room on that evening, had waved a magazine.

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" Hear that, you two ? I don't know what authority this rag bases its statement on. But tell me—doesn't it put you off wanting to be atomic scientists ?"

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Neither of the boys he addressed took the slightest notice. They sat on easy chairs before the big, open fire, looking down upon the coffee table between them. Firelight reddened their fresh faces and tinged the chessmen scattered over the chequered board that held their attention.

Alan felt himself pushed from behind and Rosamund Pennington guided him across the room towards the settee. "They're at it again," she said. "Wonder if Dev will win for a change?"

Seated, she leaned towards the players.

Alan sensed that she had lost interest in him and the tennis they had been playing that afternoon. Chess, he knew, was a mystery to her. She was only interested in the game to see whether Devlin Storm could this time beat her brother, champion of the school chess club. Her frown of mental concentration did not become her healthy, rounded features. Alan remembered the peachy glow of her complexion against the cream of her tennis blouse, and wished they had stayed longer at his house, playing records and looking through magazines.

He could feel the near elation of both players. Both expected to win— At times like this, his extraordinary sensitivity to such things was like a curse upon him.

A sense of foreboding clouded his mind as Devlin moved a knight. Chair springs creaked faintly as Dev leaned back and grinned in triumph behind a big, muscular hand.

Gerard Pennington remained motionless, leaning over the board. His dark eyes brooded in his thin face—a face remarkably unlike his sister's.

Dev's hazel, slightly sunken eyes caught sight of the arrivals. "Oh, hello, you two. Who won?"

"Three sets each," said Rosa, beaming at him.

Dev shook his head at Alan. "Not much of a player, are you? With your speed you ought to have won them all. You must have been worrying about that super H-bomb you flung at us just now."

Alan, with a mounting sense of threatening disaster, seized this opportunity for small talk. He admitted that Rosa's appearance in shorts must have done something to his habitual, almost uncanny forestalling of an opponent's tactics. What he did not say was that he had been careful not to be invincible; Rosa's pleasure at the drawn series meant more to him than that other sort of feeling.

"I half think he let me win more than he need," she smiled at them both. Only the result mattered to her.

Her brother reached out at that moment and moved his queen, put his hand back in his lap and continued to study the board.

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Dev scratched his chin. "As for the big bomb you mentioned, Alan," he murmured, as he took in the new situation on the board, "well, we've got to go on making bigger and better bombs than anyone else. I'm not going to be anyone's underdog, for one."

"But—" began Alan. He broke off to stare at Gerard's lean, enigmatic face in sudden alarm.

Rosa missed the alarm in his attitude. "Forget it, Alan," she urged him. "You know what Gerry'll say: Bombs—" She mimiced her brother's tendency to seriousness. "Bombs are only a by-product of atomic energy. Think of the good it can do for mankind!"

Alan sighed deeply.

"Oh!" she said suddenly. "You're all like wet blankets in here. Come on, Alan, we'll to into the other room."

"No," he said miserably. "I can't."

"You can't?" she echoed. "Oh well—stay here, then!"

Neither player seemed to notice her departure. Alan's heart began to pound. His throat felt parched. He wanted to get up—to run! but he couldn't move.

Dev's exultation was like a loaded gun; Gerard's inexorable confidence was like a plug in the end of that gun—threatening to make it blow back and destroy the hand that held it.

A black bishop looked puny in Dev's hand as it was moved.

For an instant there was silence, then, before Dev could lean back, Gerard moved his queen diagonally through the scattered pieces.

"Check!"

Dev started. In profile his large nose, slightly hooked, was like a beak. He glared at the board, his face normally rather red turned scarlet.

Gerard lifted his head, and smiled.

"Damn you!" Dev sprang to his feet, seized a leg of the little table. Board and pieces were flung off as he swung it up.

"No!" gasped Alan hoarsely. Even as the word escaped him, he was on his feet, arms lifted, beneath the table as it struck down at Gerard's astounded face.

The polished top thudded on his open hands, bending back the fingers. The sharp pain of this vanished in a shock of agony as his arms were beaten down and his elbows jarred.

"O-oh!" he shuddered.

The table slid sideways off him on to the settee.

Dev kicked at the chessboard, sending it off the fender into the fire. The flames hesitated, sparks flew.

As the flames caught hold of the board, Dev turned and blundered out like an enraged bear.

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"He meant to kill you," muttered Alan, trembling.

Gerard got slowly to his feet.

From the doorway Rosa asked: "Whatever have you two done to make Dev rush off like that?"

"Nothing," said Alan miserably.

She stared at him. Her resentment was like a scorching heat. Then she turned away without another word.

"Oughtn't we to tell her?" asked Gerard. He was out of his depths in a flood of human emotions like this.

Alan rubbed his elbows. "You can—if you want to."

Gerard passed his hand over his high, prominent forehead. Dev's attack on him was already a trifle unreal. People reacted so incomprehensibly; why couldn't they conform to rules, like the pieces in a game of chess or the ciphers in a mathematical exercise?

Gerard's thoughts were almost like words in Alan's overwrought mind.

Gerard would say nothing to his sister; would prefer to back out instead of wading deeper into what was to him a silly, emotional quagmire.

Oh! how Alan envied such an ability to regard people as heartless machines. The sensations of everyone around him were for ever impingeing on his ultra-sensitive consciousness . . .

Fifteen years later, he had reason to remember that terrifying evening. Standing at the gates of the Plutonium Factory at Windscale in Cumberland, he stared at the 400-foot stacks of the old piles towering over square, concrete and glass buildings, and waited for the guard to come back.

The man had stared at him in downright disbelief. How could anyone be brought from miles away, because of a sense of menace to the factory's Director of Research and Development? But, as a good guard should, he had gone to check. Now he was coming back, feeling suspicious, eyeing Alan and Alan's rusting motorbike narrowly.

"Yes. Mr. Gerard Pennington is here on the premises."

"You—" Alan forced himself to be calm. "You must find him at once. Even now it may be too late."

"I've tried to locate him," said the guard with heavy patience. "You can't expect us to search the entire area on your vague suspicions, now can you? Besides, most of the staff have gone home."

Alan tried not to hate the man; tried not to hate the knowledge of danger that was burning a hole in his mind and that had brought him into this awkward situation. "You may be right in thinking me a

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crank," he said; " but suppose I'm right ! How'll you feel if Gerard —I mean Mr. Pennington comes to serious harm ?"

" He'll be busy somewhere," returned the guard stubbornly. " I've heard what happens to men who disturb him over nothing." He turned as a car stopped inside the gates.

A sleek head leaned out of the driver's window. " What's wrong, Joe ?"

" It's nothing, Mr. Thorpe—"

" It is !" Alan seized his chance. " I must see Gerard Pennington. He's in some kind of danger. I know . . ." It was so difficult to explain.

The car door opened and the owner of the sleek head, immaculate in a blue pinstripe suit, stared at Alan. " Is your name Lister by any chance ?"

" Yes. Alan Lister. I was with Gerard at school—"

" All right, guard !" interrupted the man. " I'll take responsibility for this." As the gates opened, he held out his hand. " My name's Thorpe. Arthur Thorpe. Gerard's told me about what you've been doing. What d'you think's the matter, Mr. Lister ?" ..

" I don't know ! I think Gerard must be unconscious. I can't feel anything of him. We've got to get to him quickly."

" Right."

Alan sitting beside Thorpe and two guards in the back of the car, they raced towards the Analysis Area that was Gerard's domain.

" He came in with Mr, Storm," said the man on duty at the check point. " Mr. Storm left an hour ago. He said Mr. Pennington was working late."

" Devlin Storm here !" breathed Alan. " So that's it. Mr. Thorpe we've got to find Gerard—quickly ! I ought to have known it was Dev —but he's changed. It's such a long time—" He caught Thorpe's arm.

Thorpe stared at him a moment. It was not easy for ordinary folk—even when sympathetic—to understand. Then he turned to the check man. " Where's Pennington likely to be ?"

" Don't know— There's a light on in the No. 2 hot lab—"

" Hurry !" urged Alan.

They pushed past the protesting check man. " This way !" shouted Thorpe.

They ran in silence between darkened buildings. The check man was shouting after them that they ought to be wearing coveralls. Thorpe panted, stopped at a closed door, dragged it open.

Over his shoulder, Alan glimpsed a single light burning. On a concrete table near it light glinted on dull metal bricks built into a sort

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of cube. One side of the cube was broken open. From the break a glare shone with a faint, baleful light. On the floor, partly in the light, a man was spreadeagled.

"Get back!" shouted Thorpe and flung himself backwards out of the room, knocking Alan backwards, slamming the heavy door shut behind him.

The guards were running towards a small building marked EMERGENCY GEAR. Seconds later a siren wailed up to a scream. Within a minute one of the guards was helping the other out, completing the fastenings of a muffling suit.

"Stand clear!"

The suited guard entered the laboratory and Thorpe squeezed Alan's arm. "Everything possible will be done." An ambulance was gathering speed towards them between the huts.

Three hours dragged by before Alan, cautioned not to excite the irradiated patient, was allowed into a large private ward in the factory hospital. Gerard, propped up against pillows, looked at him with tired, lost eyes. One arm, swathed in heavy bandages, rested at his side. There was a cage under the bedclothes over his legs. He looked sideways at the nurse sitting quietly in the far corner of the room, and only spoke when Alan was seated at his side.

"They tell me you've saved my life," he whispered. "I've soaked up the absolute limit of röntgens."

"What are röntgens?"

"Units of radiation—" Gerard's tortured eyes appealed to Alan. "They say I must have fallen and caught hold of the remote controls in an effort to save myself. They say the screening cell must not have been assembled properly. But it wasn't like that—it couldn't have been!"

"Why not?"

Partly from Gerard's reply and partly from the sick man's chaotic thoughts, a picture of what had happened grew in Alan's mind.

Gerard had come to take over the direction of the Windscale laboratories. It was a very important post, regarded as a plum by up-and-coming atomic physicists, and Gerard was the youngest man ever to be offered it. Devlin Storm had been at the laboratories for several years, being promoted several times and, as Assistant Director, had himself been a likely choice for the Directorship.

He had seemed to Gerard to take what must have been a disappointment without any rancour. They had done some interesting work together. Tonight Dev was going off on a month's leave from duty.

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Their last experiment together had been going perfectly—when suddenly Gerard had felt a sudden stunning pain on the back of his head . . . and he had remembered no more.

Gerard's good hand clasped and unclasped at his side. " I'd quite forgotten that he'd tried to kill me once before. Alan, why should he want to kill me ? He seemed so pleased to see us come here."

" Us ?" queried Alan.

Gerard grimaced with impatience. " Rosa is keeping house for me. They've given me a very nice villa in the new village—"

" I didn't know Rosa was here. Have they sent for her ?"

" Yes. She seems to be out, or something. She's usually stayed in in the evenings, too . . . Alan, I know it sounds incredible, but can it be that he was jealous of me taking over a post he thought he was going to get ?"

" Why else would he have knocked you on the head ?" muttered Alan. " And then run off," he added.

Gerard blinked. " I wonder where he can have gone ? I think he said something about a week in London . . . Can't you trace him ?"

" No." Alan shook his head. " It was only your instant of great alarm that got through to me, this evening. He's too far off, wherever he is. If England was a desert, his mind would be like a beacon—no matter what distance separated us— As it is, he's like one of your radio-active atoms hidden in a mountain of similar atoms . . ."

" Oh." Gerard understood that readily. He sighed deeply. " But you still may be able to help. I've asked them to find room for you in the hostel here. You won't have to rush off, will you ?"

" No. I can stay as long as you want."

" What about this other telepath you were staying with ? Is his farm on the 'phone, so you can let him know ?"

" I can let him know," nodded Alan. Distance meant little to telepaths used to contacting each other. Hartley Clay did have a telephone, but there would be no need to use it.

Arthur Thorpe was waiting outside the ward, and escorted him to the hostel. Although the atom man chatted easily, Alan could tell that something was being held back.

" Is there anything else I ought to know ?" he asked suddenly as Thorpe closed the door of the pleasant little bed-sitting room in the hostel.

Thorpe eyed him. " You could tell that ?"

" Yes. But—" Alan lifted his hands. " Don't go thinking I'm picking atomic secrets out of your mind. I'm still only a novice. I can't read your thoughts unless you help me. I'm just sort of super-sensitive to people's emotions."

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"I see." Thorpe hesitated and then took a letter out of his pocket. "Pennington's sister may have left this for him. It was on the desk in his house. You can see it's addressed to him."

"Yes. And that's Rosa's handwriting—"

They stared at each other.

Thorpe held the letter up to the light. "I was going to give him it, tomorrow. We don't want to upset him until he's begun to recover from shock. D'you think we ought to let him have it . . . or should we open it? You're his friend, what do you think?"

Something that Alan had been trying not to think about jumped like a premonition into the front of his mind. Only a week ago he had had a letter from Rosa. *Dev is going places*, she had written. *Why aren't you like him? You're too much wrapped up in yourself and your Hart Clay in your nasty mind-reading, ever to be anything at all. If only you were even interested in*—there had been a word heavily crossed out here, and over it written in—"*some*thing" *else*.

He had spent some time thinking over what she had had in mind while writing that, now he felt that he knew. "We must open it!" he declared.

Thorpe slit open the envelope, hesitated again. "Here, you read it."

"All right."

The small, graceful handwriting struck its meaning into Alan's mind, like a blow.

> Dear Gerry,
>
> I'm leaving you. I don't know how you'll get along with the housekeeper I've got for you. She won't put up with the way you carry on as I have done. Please try to be kind to her for my sake.
>
> Dev has asked me to marry him. We're going away together—

Alan scarcely grasped the sense of the rest of it; but nowhere was there any hint of where she and Dev were going.

Towards morning, police inquiries traced them to Manchester Airport, from there to London Airport and from there to Zurich. In Zurich, a priest, apparently thoroughly antagonised by Dev's rage at him, volunteered the information that he had refused to marry them owing to some fault in the make-up of a special licence. But the trail ended there, as though the curtain had been drawn over the end of the second act of a drama.

They had disappeared.

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Three years later Alan was back at the gates of the Windscale factory asking for either Thorpe or Pennington. There was barbed wire entanglements around the gates and soldiers with fixed bayonets paced sentry-go, but he was admitted almost at once.

Gerard Pennington and Arthur Thorpe welcomed him in an office in the Administration Block.

" We were thinking of sending for you," said Thorpe. He looked tired and harrassed, his suit was creased as though he had lived in it for days and he had lost much of his sleekness.

Gerard, physically fit again, looked even more out of his depth than Alan ever remembered him being. He said: " We've heard of Dev." He looked at Thorpe.

Thorpe leaned back in his chair, put his hands on the desk and strained his evidently weary body, stiffling a yawn. He pursed his lips. " You know the world is very close to being plunged into all-out atomic warfare, I suppose ?"

Alan nodded. " Yes, the blackout is being enforced even out on our hill farm."

" I can't understand people !" said Gerard and he rubbed his forehead, looking at them from under his hand. " The world's such a wonderful, interesting place. Why should anyone want to destroy it?"

" That," said Thorpe with weary patience, " is not our immediate concern. We've got to stop him doing it."

" Dev ?" asked Alan.

Thorpe stared at him, head tilted. " You know ?"

" Not exactly. But I guessed."

" How ?"

" I had a terrible feeling that Rosa needed me. She's far too insensitive ever to become a telepath, so I can't imagine how she got through to me over such a great distance. I know I've developed a lot through practising with Hart at the farm . . . But . . . to contact her over the tangled thoughts of millions of people—"

They both stared at him, but there was nothing else he could tell them.

Thorpe took a deep breath. " I see. Well, it is Devlin Storm. When he left this country, he must have had his plans all made. From Switzerland you can get anywhere." He glanced at Gerard. " It's my guess that Rosa Pennington hadn't the slightest idea of what she was getting into when she went off with him. She must have got a horrible shock when she found herself a pampered, privileged prisoner of a foreign power—"

" Oh, my God !" said Gerard brokenly.

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Thorpe took a packet of cigarettes from his pocket, but seemed to forget them for he did not open it. "He thought he was being very clever, no doubt. I can imagine them giving him everything he wanted. Gerard 'll know what that means to a scientist . . . But all the time, they were milking him of all his knowledge and experience. He probably never heard a whisper about the increasing prospect of war."

Thorpe looked at the packet of cigarettes in his hand, opened it, took one out, and seemed to forget it. "They don't tell us what happened. It's my guess he suspected they were going to . . . remove him, or something. Being Devlin Storm, however, he had no intention of being removed without hitting back.

"So he beat them at their own game. Just how well he did so, you can tell when I say they contacted our Government at 2 a.m. last night. They must be desperate to give us information of their own resources."

The cigarette crumpled in Thorpe's contracting hand. "He's been calling himself Sturm, Dortmund Sturm, since he went over to them—He's been working in laboratories deep in the heart of a remote mountain chain—we've even got the location. They've been storing atom weapons there for years. They'll have other stores no doubt, but this is apparently one of the biggest. And Storm—or Sturm—is sitting in it all alone. He's got himself securely shut in, and is taking anti-sleep pills to be certain they don't break their own impregnable defences. And he says he will blow the mountain to bits in his own good time."

"They've even tried torturing Rosa in front of him!" broke in Gerard.

Thorpe nodded. "They have a two-way television link with him."

"He told them," said Gerard, "that Rosa meant nothing to him any longer. Her coldness had killed whatever feeling he's had for her."

"Yes, they tried everything." Thorpe took out another cigarette, put it in his mouth and lit it, grimaced as though the smoke was foul, and stubbed it out with nervous fingers. "Apparently they have been experimenting with telepathy, too. Naturally—unlike our Government who've let you and Clay go on the best you can on your own—they've done it properly."

"Then—" Alan hesitated. "That's how Rosa got through to me—"

"It looks like it. They've let their experimenters talk to her."

"If he blows up that mountain—" said Gerard. "From the figures they've given us, the radio-active dust will blight the world—affect everything living."

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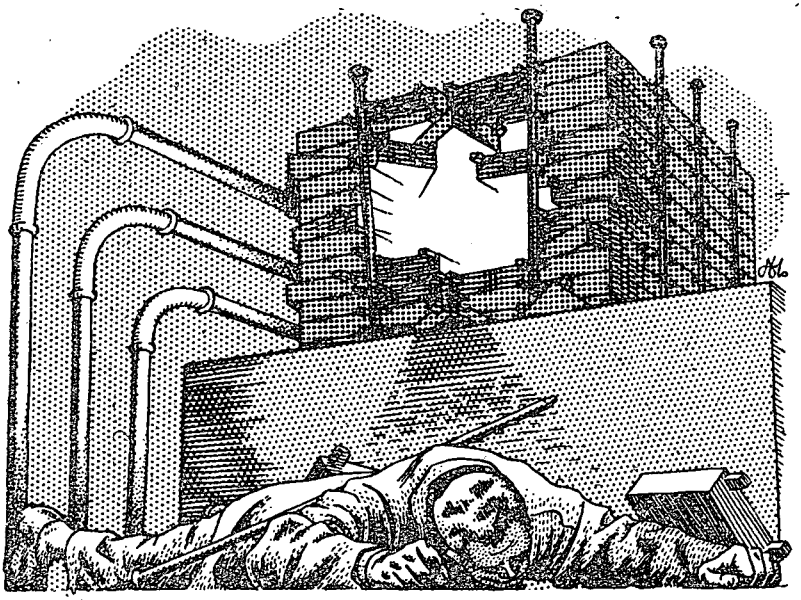

Thorpe studied Alan's face. "Do you think there's a chance you might be able to do anything?"

"You mean go there and see?"

"Yes."

"How do I get there?"

"They've agreed to let a single aircraft through their defences to take you."

"I'll come with you!" declared Gerard.

Thorpe started and looked at him strangely.

"No, sir. Not you. We cannot take the risk of your falling into the hands of a potential enemy."

Gerard shook hands with Alan in stunned silence, and Alan climbed the ladder, glimpsed the huge triangle of the wing and was swallowed by the fuselage.

The darkness around the great military aircraft was like a void in which it hung, the only wakeful thing in a sleeping world.

Light flooded suddenly over it from below, slipped away and stood like a fantastic finger against the night, came back to hold them.

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The airman sitting in front of Alan looked back. His moustache lifted as he smiled reassuringly. "Don't be alarmed, sir. They'll be following us like this all the rest of the way, I dare say."

Alan looked out of the window at his side. The light came up at them out of a great expanse of darkness. It steadily moved away behind them, until it seemed it must surely lose them. Then another, ahead, shot up and took hold of them, and that, too, fell back and was replaced by another, and another and still another, until it began to seem the aircraft strode on tall stilts of light.

Alan lost sense of time.

"Fasten your safety belt, sir. We're going down," warned the airman.

Below and far ahead glittered two converging strips of light. As these appeared to swell and float up in the darkness, Alan's stomach ached into his awareness. He remembered someone—whose name he had never learnt—calling this country "a potential enemy."

Faint, ghostly phosphoresence floated all around the sinking plane, and he remembered the talk of mountains. What he could see would be their snow-capped peaks. Somewhere ahead, deep in a rocky burrow, sat Devlin Storm—determined as ever not to lose the game he played—

Alan swallowed hard. His familiar world was far, far behind in the night . . .

He thought of the farm where he had had the companionship of one of his own kind. Hartley Clay's whitening hair, blue, almost sightless eyes, brown weather-beaten face and work-roughened hands became a picture in his mind—an image that moved with self-conscious deliberation, and stopped, and spoke to him across the distance that was no distance to the thoughts of attuned telepaths.

"*I'm with you.*"

Alan's fear fell away from him, the knots in his stomach eased, his pounding heart seemed to hesitate and took on a new rhythm.

The plane bounced once, settled down and ran to a halt. It taxied towards signalling lights. The pilot looked back and held up his hand, thumb up.

The airman opened the cabin door. Alan stepped out into the night.

"Mind the steps, sir!" cautioned the airman.

Alan peered at a cluster of shapes hurrying towards him.

"Alan Lister!" Hysteria shrilled in Rosa's well-remembered voice. He caught her in his arms. "Rosa!"

"Oh," she breathed. "I never expected ever to see you again. Oh, Alan! Alan!" She looked up into his face, her own seeming thinner than he remembered it. "Gerry—how's Gerry, after all this time?"

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"He—" Alan caught himself in time. Rosa did not know what Dev had done to her brother. Now was not the time to tell her. "He's fine." He released her and pushed her towards the aircraft behind him. "You'll be seeing him soon, I hope. Get in that plane. We're not staying any longer than we have to."

"But—"

"There's no time to lose!" he urged her. "I've come here to do a job. Don't you be a hindrance to me. Get in that plane!"

She turned meekly and he watched her climb into the fuselage. "She's coming back with us!" he called up.

Other voices, foreign sounding, intruded into his attention and, bracing his shoulders, he turned.

"Mr. Alan Lister?" queried a tall thin man.

Alan nodded, then remembered the gloom hid the movement. "Yes."

"We are pleased to welcome you. I am to be your interpreter. You will please call me Rik. I will now introduce you to our best telepath. Joseph Zimm."

Another man held out his hand wordlessly. Alan heard the interpreter begin: "He does not, unfortunately, speak the English . . ." But the rest of the words were lost as Zimm's mind met his. Alan's heart leapt with excitement.

Contact with a telepath, even here, brought a thrill of pleasure that set the pulses racing. Words might be impossible—he recalled the wordless call transmitted to him from Rosa—but there was welcome, and a desire to help.

With Zimm here and Hart in far-away England to support him, he felt strengthened, almost confident.

His step, as he walked away from the plane into the unfamiliar world before him, was firm. Tommy-gun sentries loomed up, peering at him curiously, but left him unmoved. A big closed car took them past lines of silent, threatening bombers.

Within thirty minutes of landing, he was standing in a concrete building that squatted against the dim, towering mountain. Behind him the door was shut and fastened. At his side was a foreign-looking little vehicle, half-truck, half-car, the wheels of which stood on rails leading into the dark mouth of a tunnel. In front of him a television screen was lit up, and Devlin Storm might be looking at him through the wide-angle camera beneath the screen, but so far the renegade had not chosen to answer.

The room around Alan was barely furnished with a desk, a bench and some chairs. Physically, he was quite alone, but Hart and Zimm were reassuring presences in his mind.

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The screen flickered—and Devlin stood on it, staring at him.

"Lister! So—they've brought *you* here, even. What do you expect to do?"

"Talk to you, perhaps."

Dev's hazel eyes narrowed. They were more deeply sunken than Alan remembered. They shone unnaturally bright from a haggard, shadowed face. Alan started slightly as he noticed that Dev had developed a paunch. Always big and heavy, the life he had led here had made him put on weight.

Dev's head sank deeper into his huge shoulders. "And what would we have to talk about?" He laughed harshly. "Old times?"

"Well, no. What's done is done. It's the future I'm thinking about. If there is to be a future. Why destroy the world—"

"Destroy the world?" Dev flung back his head and roared with laughter. He sobered slowly and glared at Alan. "Destroy the world, you say. Well, why not? What is the world to me? What has it got to offer me? Even here, amongst these staring foreign faces, I'm no longer wanted. There were going to purge me, I tell you. Purge me! Me! The world's finished for me. My country, you, Gerard, my work—my work!—Rosa—everything finished! My world is at its end. So why shouldn't the world end with me?"

"Then you know what you are doing?"

"Oh, I'm not mad, if that's what you mean. Nobody could certify me. I'm not even bitter, any longer. I'm just going to end it all . . . the whole, stinking mess!"

Alan licked his lips.

Dev grinned, coldly triumphant. "You're frightened. Just like them. You know me better than they do— They're frightened—all of them from the top to the bottom of their *democracy*. Frightened."

Alan tried to think of something to say—something that could touch this determined man—but what was there?

Nothing . . .

Dev straightened himself, began to turn away— Alan only then saw the vast honeycomb cavern reaching away behind the burly figure and the little table beneath which was some unfamiliar, threatening mechanism and on top of which was a little, plastic box topped with a puny-looking button.

Dev halted, and looked around. "I've known you all my life, Alan Lister. We were friends once. If anyone is to be with me at the end, it might as well be you. Yes. Get in that little car thing at your side."

Alan reached for its door. The metal was icy cold and his fingers slippery with sweat. He fumbled it open, aware of Dev grinning at

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him, stumbled into the seat. Dev reached sideways and the car moved smoothly forward into the black mouth of the tunnel.

Alan's spine prickled. The wheels ground endlessly on the rails. But for Hart and Zimm holding him steady, he felt he would have gone mad.

Suddenly there was a glowing eye ahead of him. It was not an eye. It was the end of the tunnel. It grew swiftly. The darkness was behind him. He held his breath.

The car had stopped. The cavern gaped like the jaws of a monster fitted with atomic teeth. Dev was leaning over the table, his finger beneath his chest, pointing down at the button on the little box on the table.

" If you make one threatening move," he said, " it will be the end. If you have some way of killing me, I will fall on the button, and that will be the end, too."

Alan, watching him, nodded.

Dev jerked his head. " Get out of that thing. Come a little closer. That's enough ! Now, stand still. Quite still. I can't go on with this much longer. What would you say is a fitting epitaph to mankind ?"

" They did their best," said Alan slowly.

Dev's tired eyes met his steadily. The big man's great weariness was telling even on that powerful structure of muscle and bone. Some of his thoughts strayed out to Alan's mind, and his words began to sound like an echo.

" It was a poor best, wouldn't you say ?"

" People can but try." Alan suddenly realised that he had not spoken that answer—had only *thought* it.

But Dev shrugged as though he had *heard*. He had heard.

His voice came as an echo of his thought. " Trying isn't good enough." He sighed. Memories of his life ran through his mind, and filled Alan's mind.

Alan knew then, with a shock of unexpected sympathy what it was like to be a man who could not bear to lose—who would do anything rather than be beaten. There was even a kind of grandeur in such indomitable, driving purpose.

He gathered himself to divert it and felt Hart and Zimm pouring their life force in to reinforce his own. He felt himself right inside the unfamiliarly large, powerful body of Devlin Storm, felt himself taken hold of by the undefeatable purpose of the man, and felt his—yes, it was his !—finger moving down. And he was quite unable to stop it, any more than was its actual owner.

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For an instant of time, both incredibly short and incredibly long, there was a blinding light, bluish, awful. It seemed as though he could see the atoms splitting in a kind of dreadful slow motion. And the fury of their fission was spreading, building up in the mountain.

Now, he—Devlin Storm—stood somehow high above the mountain, so high that he could see the first light of the approaching dawn, and looked down upon the eruption of rock as the colossal fireball burst out, all consuming, climbing to the sky like a Sun hurtling heavenwards.

And, in the slow-motion of it all, he seemed to see the body of Alan Lister blasted and vaporised, saw the shock wave flatten the lines of waiting aircraft and spread out through the quaking mountains around, destroying Rosa as though she never was.

And all the time the fireball hurtled upwards, balanced on its vast pillar of black smoke, consuming itself, dispersing its blazing atoms in winds of its own making.

It was the death pall of the human race. The end of a chapter in the endless book of a developing universe.

Devlin Storm felt suddenly spent, utterly spent. All the conflicts which he had known in his innermost being were at an end.

Mists seemed to close in on his mind, and he seemed to lie in them, utterly at peace. It was all finished.

Someone, strangely—inexplicably still alive, was panting at his side. But it didn't matter.

It was the end of his world.

Shaking in every limb, Alan Lister looked down at the big body beside the table. He felt the thoughts of Hart and Zimm pulling him back out of Devlin's inert being, out of horror unspeakable.

He stared down at the big man's glassy eyes. He noted the calm, rhythmic rise and fall of the deep chest. For several minutes he could do no more than that.

Then he stirred himself and walked uncertainly around the little table, caught hold of Devlin's coat collar and dragged him away. He paused again, panting heavily, while his strength seeped back.

He tried to lift Dev to his feet and was failing when, surprisingly, Dev, moving like a man in a trance, pulled up his knees and got to his feet himself.

Alan took the big arm and pulled. Dev followed him like a blindly trusting child.

As the car emerged into the barely furnished room at the other end of the tunnel, men stared.

Alan led Dev the few paces up to them.

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" You did it," gasped the tall interpreter.

Alan nodded. " With the help of a man back in England and your man here, I got into his mind. He thinks he is dead—that the world has been blown up and is finished. For him, it is—and I think it always will be. His mind is fixed with the thought."

The interpreter turned excitedly and translated to the others, and they looked at Alan guardedly, and at Dev with their hatred of him mixed with a kind of baffled respect.

" Tell them," said Alan, " that I couldn't stop him doing what he wanted to do. All I could do was to make him put his finger down just clear of that button, so that he only *thought* he pressed it, instead of really pressing it."

The interpreter translated this.

" I'm nearly finished myself," said Alan. " I—I think I'll get back to my plane now." He caught hold of Dev's arm and the big man followed him as though sleep-walking.

Suddenly, however, Alan felt Dev halt. He looked back in vague surprise.

Two burly men were holding Dev's arms.

The interpreter said: " No. Not him. You may go but it was not agreed to let Sturm go back to your country and be taking our secrets there with him."

" But he's finished. A dead man that walks. Don't you understand?"

The interpreter spoke to the others, then turned back to Alan and shrugged. " He stays."

Alan sighed. He was so tired. He felt he had no reserve of strength left to argue with them. Probably, anyway, they were right.

He felt Zimm's mind touch his, in comradeship, and a warm glow went through him physically as he realised that here at last was the foundation of world peace—here in the mind of Zimm and Clay and himself and undoubtedly others as their talent expanded—a foundation which could not be disrupted by barriers of language or customs or differing politics.

Outside, as he was escorted back towards the waiting plane, the first light of the new dawn was beginning to brighten the sky.

E. R. James

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It makes a distinct change to find an author prepared to take a tilt at the scientific world and find it wanting. The following article will undoubtedly bring many a chuckle to the layman—it will almost certainly tempt some of the more scientific to reach for paper, pen and shotgun.

ASSTRONOMY

By Eric Frank Russell

Of late we have had a series of phenomena described as flying saucers. Despite frequency of appearance and great number of observers, not all of whom were cretins, certain dogmatic astronomers have seen fit to pour scorn upon the notion that some if not all of these aerial super-constructions might have come from another world.

Chief reason for this attitude is that such an idea flatly contradicts established astronomical dogma. The possibility of other life-forms reaching this planet cannot be admitted without also admitting that the high priests of our observatories are living in a dream-world of their own, a fanciful cosmos infinitely more fantastic than reality.

Dogmatists argue that no visitors could come from Venus or Mars because the former is some thirty million and the latter some sixty million miles away, immense spans needing a lifetime to cover. Besides, neither planet can support life. Their atmospheres are too thick or

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too thin, too hot or too cold, lack this and lack that, and so on. The high priests, you see, know it all. Amen !

They cannot be blamed. They have learned how to skin friends and influential people. Their first concern is to defend their way of life.

So they have pronounced that all observed phenomena incompatible with their dogma are imaginary, or examples of mass hysteria or spots before the eyes. Note that astronomers never just ' say ' anything. They always ' pronounce ' in the same way that journalists invariably ' reveal.'

Example (From our Special Correspondent): " Today I am able to reveal that Professor Schmootze has pronounced . . ."

Let's take a look at how much the astronomical wiseacres do know and how they got to know it. From here onward we shall be parading our ignorance naked and unashamed—but we shall be doing it in the company of our leading experts assuming that they are expert and are leading something somewhere.

All astronomical estimates of distances in the solar and sidereal systems have been obtained by triangulation and checked by observed lags in light phenomena the velocity of which has been checked over distances obtained by triangulation. This means that buns are as big as elephants because elephants are as small as buns.

One baseline for triangulation is Earth's equatorial diameter. According to the oracles it has been determined to within fifty feet, by instruments and expert calculations. Hayford's estimate: the radius is 6378.388 kilometres, which means a diameter of 7926.68 miles.

Height of Mauna Loa as determined by instruments and expert calculations: by Cook, 18,410 feet; by Marchand, 16,611 feet; by Wilkes, 13,761 feet.

Everest, measured and calculated with great exactitude as 29,002 feet—yes, even to those odd two. Then re-calculated with great looseness as somewhere between 26,100 and 31,900 feet.

Eight independent measurements of Mt. St. Elias, by triangulation and expert calculation, produced results ranging from 12,672 feet to 19,500 feet. By barometric determination, 18.092 feet.

In 1938 Allan B. Crawford, member of a Norwegian expedition visiting Tristan da Cunha, saw fit to doubt the charts of the British Admiralty Hydrographer, resurveyed the island, found the charts very much wrong. Whereupon newspapers ' revealed ' that ' the island has been reshaped,' a sweet way of telling us that experts had been compelled to alter their charts without actually saying that experts had been compelled to alter their charts.

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The gist of this comedy is that by instruments and triangulations and calculations experts cannot measure the height of a mountain nor determine the size and shape of an island—but if they are astronomical experts they can, by the same method, ascertain the diameter of this planet to within fifty feet.

The blunt and inevitable conclusion is that Earth's alleged diameter is an arbitary assumption made to suit the convenience and mysticism of astronomers. All triangulations from an assumed baseline are merely meaningless extensions of an assumption.

Another baseline is what is called the diameter of our orbit, presumably the mean of the major and minor axis of our elliptical path around the Sun. The simplest way to find this distance is to determine the distance from Earth to Sun, double it and add the diameter of the Sun.

Methods that cannot measure mountains nor islands nor spherical diameters cannot be conceived as methods capable of measuring spatial distances. The astronomers would have us believe they can do it, but by their works shall we know them.

Distances from the Sun as determined by expert observation and expert mathematics: Kepler, 13,000,000 miles; Roemer, 82,000,000 miles; Huygens, 100,000,000 miles; then 'determined with great accuracy' as 95,298,260 miles. Until Foucalt came along and pronounced it 91,000,000 miles, followed by Dr. David Gill with 93,000,000 miles.

None of these were corrections. Astronomers, unlike ordinary people, never make corrections. They make 'further refinements.' For the sake of getting some sort of badly-needed co-operation they set up a dogma-refinery in Paris in 1911. We are going to have some fun with this, as follows.

Page 34 of *The Universe Around Us* by Sir James Jeans—There was a conference of astronomers in Paris in 1911. They 'adopted' 92,870,000 miles as 'the most likely value' for the mean distance from Earth to Sun.

Page 227 of *The Universe Around Us* by Sir James Jeans—With microscopic slowness the earth is drifting away from its primary and 'exact calculation shows that its average distance from the Sun increases at the rate of about a metre a century.'

According to these two items we are asked to believe—nay, we are told to believe—that by 'exact calculation' it is possible to identify an annual difference of one centimetre in a length of 92,870,000 miles

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which has been ' adopted ' as ' a most likely value.' If this be part of science then this part shall be defined: it is manifest twaddle.

A thing with which dogmatic astronomy pins together its assumptions is the so-called velocity of light. By instruments and calculations this value has been estimated, or so they say.

One way in which it was done was by noting the apparent displacement of Jupiter's satellites as observed from the nearer and farther sides of our orbit (or guessed-at mean of the major and minor axes), and dividing the recorded time-lag into the bald assumption to give a time-speed ratio said to represent the velocity of light.

More observations and more mathematics have brought the usual ' further refinements,' the latest of which—from Sweden—ups this imaginary value by another imaginary eleven miles per second.

The satellites of Jupiter are very eccentric in their orbital motions, so much so that they have undergone repeated obscurations of such unpredictable duration that their observed displacements give a list of various values. All observations providing figures in accord with dogma have been accepted, listed and published for the benefit of those easily awed by high priests. All other observations have been excluded.

Michaelson and Morley, perhaps leery of scientific theology, or possibly hoping to acquire more merit by seeing a confirmatory vision, set out to determine a ' more exact ' value for the velocity of light. They tried to do it with tubes and mirrors. They failed.

The dogmatists were disconcerted, but not for long. How to publicise this failure as a victory ? Einstein stepped in. Einstein said the reason why they did not get the result they ' ought ' to have got was because their method depended upon ether drift and that they had succeeded in demonstrating that there is no detectable ether drift. Result: another triumph for the experts; Michaelson and Morley, aided by Einstein, discover that there is no ether drift.

Determination to drill the facts in accordance with dogma can go so far that while reports of the Michaelson-Morley experiment originally described it as designed to find ' an exact and demonstrable value for light's velocity,' many of today's references to the same experiment describe it as an effort to detect ether drift, and, of course, carefully exclude any mention of the velocity of light.

If any experiment should show that light has no velocity, or has unthinkable motion, or is instantaneous, or generally has any attribute it ' ought ' not to have, then that data will be excluded.

But blatant contradictions cannot be excluded. They can be explained in a manner that creates harmony in one direction only to set

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up half a dozen new idiocies in other directions. Then the idiocies have to be explained. Some of the contradictions inherent in expert dogma are so violently antagonistic that the only thing the high priests can do about them is to ignore them and pretend they are not there.

For example: to bring sweet harmony into Einstein's exotic compositions it is necessary that the velocity of light should be the ultimate in cosmic velocities. Nothing can surpass it. Dogmatically, it is the limit.

The dogmas of wave-mechanics postulates that light is composed of wavicles that oscillate rapidly in a complex undulatory path which, in section, forms what is known as Lissajous' pattern. The unsurpassable velocity of light is the axial speed of these composing particles which, according to experts' contradictions, cannot possibly move along their longer zig-zag path at speed greater than their forward motion axially, despite that the long undulatory path is covered in identically the same time as the shorter dead-straight path.

To simplify this picture let us imagine a drunkard staggering to and fro across a street, from pavement to pavement, and covering three hundred yards in order to advance one hundred. Astronomically speaking, his speed along his three hundred yards path cannot be greater than the speed with which he advances the one hundred yards, despite that both paths are covered in the same time. We have heard theories less preposterous at the circus.

No expert has the remotest notion of what the speed of light might be in the realms of free space, unhampered by Earth's atmosphere and gravitational field. For ourselves, we question whether light or anything else can be said to have a cosmic velocity. If it has, it is velocity relative to what ?

Up in the sky is the Moon. Astronomers know very little about it. The Moon is within plain sight of the common herd and it's not wise to pretend great knowledge of things within plain sight. Somebody might check up and prove the experts wrong.

Millions of light-years away (whatever that may mean), are faint flickers of light beyond close visual reach of the proletariat. The astronomers know an awful lot about those.

Not long before the war we got hold of an astronomical pistache 'explaining' why the Moon is drifting farther away. "The process will continue until, at some time in the immensely distant future, our satellite will slip entirely from our gravitational grasp and we shall lose it altogether as Venus may have lost a satellite she once possessed." Rate of drift not mentioned but probably determined by instruments and expert calculation as one centimetre per annum.

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Soon afterward we found another authoritative article 'explaining' why the Moon is drifting nearer. "The drift will continue until in the far distant future our satellite will break up under gravitational stresses and the remnants will form a mighty ring around this planet in the same way that Saturn probably acquired its rings."

We shipped these two exhibits to a high priest namesake and asked him to pronounce once and for all whether the darned thing is coming or going. He replied, curtly, "The Moon's orbit is eccentric." We replied, "You're telling us?" with which correspondence ceased.

It is what fortune-tellers in observatories call 'the problem of the three bodies.' The late Professor E. W. Brown, of Yale University, spent most of a lifetime on it and some of his formulae were reputed to be the length of a book. Mathematically, it cannot be solved by those who, mathematically, *can* solve the problem of the million bodies not in plain sight. Distance lends computational simplicity.

Dogma has it that the Moon raises tides. Tiffany Thayer, a sturdy heretic, spat in astronomical holy-water by checking the year-in-advance predictions of the U.S. Coast and Geodetic Survey against the automatic tide-guage at the foot of Whitehall Street, New York, and published the result in the form of a chart covering the daily record from June 25th to July 25th, 1937.

He comments, "The tendency of the fortune-tellers seems to have been to anticipate most extremes from fourteen to twenty minutes or more."—*Fortean Soc. Mag.*, October, 1937.

If the Moon raises tides, then the experts who can measure the centimetre-per-annum extension of a mighty assumption cannot measure the Moon's miles-per-minute orbital swing to within fourteen to twenty minutes or more. Alternatively, the Moon does not raise tides. Mystics in observatories can have it whichever way they like, but they cannot have it both ways—either their refinements are rather coarse or else their dogma is cock-eyed.

Strange lights have been seen upon the Moon, and with far greater frequency than laymen realise. The adepts who by spectroscopy, guesswork and mumbo-jumbo can 'analyse' pinpoints far beyond visual range of ordinary folk cannot analyse the lights on the Moon. They don't know what they are. We issue a challenge to professional astronomers. We point to the Moon and say, "Refine us that!—never mind the rest!"

They won't. Professionals rarely look at the sky. They are too busy writing books in which data selected from a great quantity supplied by amateurs is drilled to conform with dogma, all the rest being

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excluded, and the whole fantastic flapdoodle is expressed in terms suitable for a public that breathes with its mouth open and talks with it shut.

Noughts are the medicine for noodles. Stun them with noughts. If the average nitwit accepts the claim of exactly calculating a daily difference of a hairbreadth in an adopted immensity or a most likely enormity, he will swallow anything.

So: the temperature at the Sun's centre is about 6,000,000 degrees. No need to tell him what sort of degrees. Every day the Sun radiates from its surface the amazing total of 4,000,000 tons. That will sink him—and he can't disprove it. The mass of the Earth is 6,000,000,000,000,000,000,000 tons. All done by instruments and expert calculation.

Here is Dr. Shapley, an accomplished nought-user: about 1,000,000,000 meteors strike the Earth's atmosphere every twenty-four hours. But more lavish noughtage is displayed by the high priest who roundly pronounces that a cubic centimetre of air near Earth's surface contains 30,000,000,000,000,000 molecules. The specially inscribed dog-biscuit is awarded to H. Gordon Garbedian's *Major Mysteries of Science* in which Plank's Constant—always one of dogma's constant planks—is defined as no less than .00000000000000000000000000000655 erg-seconds. Carrying the expert measurement of a theory to twenty-nine places of decimals is a triumph of exact calculation.

A nice, round, smooth, layman-stunning figure the nought. It is a circle, the mystic symbol of infinity. From a bird's eye view it might be the well of wisdom. It also bears resemblance to a halo. Experts are never tired of wearing it.

We have a priestly work—by Ruby Ta'Bois, F.R.A.S.—pronouncing that Halley's Comet, "noteworthy for the length and brilliance of its tail, shows no deterioration during three centuries" despite that, according to the same source, it "lost its tail in 1835 and again in 1910."

Donati's Comet, which once had two tails, has since undergone 'no deterioration,' leaving it with one. We have details of other comets that have been de-tailed and we have data that, in these days, is excluded.

For example: in 1910, shortly before Halley's Comet was 'officially due' to arrive, the high priests boosted it like manufacturing chemists marketing a new laxative. It was to be the spectacle of the century, a heavenly display of pyrotechnics put on by bountiful Providence to keep astronomy in the public mind. Millions turned out to enjoy the free show. New York took to its roof-tops. The result was the flop

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of the century. One description was, " Less spectacular than a match scraped on the seat of somebody's pants half a mile away."

To further illustrate the cussedness of comets, Biela's Comet split in two and the twin heads continued to rush through space side by side, within the sphere of each other's influence, but carefully refrained from revolving around a common centre of gravity as according to astronomical theology they ' ought ' to have done.

They don't know whether the Moon is coming or going, whether comets are coming or going or even whether the galaxies are coming or going. For some reason beyond the uninitiated, they do know whether flying saucers are coming or going.

Einstein: There is a mutual recession of the galaxies. Proof: A shift of absorbation lines of the spectrum toward the red end. Cause: ' Einstein effect,' or a slowing down of physical processes at high velocities.

Hubble: There is not a mutual recession of the galaxies. Proof: A shift of absorbation lines of the spectrum toward the red end. Cause: Loss of photon energy in space as ' confirmed ' by the ' proved ' existence of a cosmic cloud of calcium and sodium vapours.

Dr. Hubble, of Mt. Wilson, is the expert who has weighed the great nebula of Andromeda, pronouncing it to be 3,500,000,000 times that of our Sun. And since the Sun as a body floating freely in space has no weight of any sort whatsoever, we learn that the great nebula of Andromeda, also floating freely in space, has a weightlessness of 3,500,000,000 times nothing.

Einstein is the expert who has postulated a curved space which, according to another aspect of his own distinguished daftness, cannot be curved except relative to something else.

New Lands by Charles Fort: " The stars that were catalogued 2,000 years ago have virtually not changed, have changed no more than a little more nearly exact charting would account for; but, in astronomic theory, the stars are said to be thought of as flying apart at unthinkable velocity; so then evidence of changed positions of stars is welcome to astronomers. As for well-known constellations, it can not be said that there has been change; so, with several exceptions, ' proper motion ' is attributed to stars that are not well-known.

" The result is an amusing trap. Great proper motion is said to indicate relative nearness to this earth. Of the twenty-five stars of supposed greatest proper motion, all but two are faintest stars; so these twenty-three are said to be nearest this earth. But when astronomers take the relative parallax of a star, by reference to a fainter star, they

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agree that the faintest star, because fainter, is farther away. So one-time faintness associates with nearness, and then conveniences change and faintness associates with farness, and the whole subject so associates with humorousness that if we are going to be serious at all in these expressions of ours we had better pass on."

A powerful odour of brimstone and other hell-fumes is detected in priestly haunts when one offers evidence of meteoric selectivity.

If a meteorite wallops the earth near Comrie, Perthshire, it is an isolated incident. A little later Comrie gets another one and the dogmatists call it a coincidence. A third is another coincidence, a fourth yet another, and so on. How often must a coincidence repeat before it becomes a genuine phenomenon ?

There is a class of arrivals from space known as australites. Our data says they are meteorites resembling small spheres of dark, glassy substance that look as if they have rotated in molten condition while plunging through our atmosphere. *They are peculiar to Australia.*

But in the cosmos constructed by dogmatic astronomers it is absolutely impossible for a succession of meteors from one radiant to strike repeatedly on or near the same spot on Earth's surface. Dogmatically, it is completely impossible for any especial type of meteorite to be peculiar to any particular district or area on Earth's surface.

To admit otherwise is not merely to shake astronomy's leaning tower of dogmatic assumptions, but to blow it headlong toward the stars that may be far or near, very near.

It means admitting that this world of ours is not spinning on its axis while whirling along its orbit while whizzing with the rest of the solar system toward Vega. It means admitting the awful blasphemy that Earth is not partaking of the violent medley of motions which it has been officially pronounced to partake.

Ben Hecht: " Has science by a process of maniacal exclusions of telltale data, of telltale phenomena, foisted an algebraic Mother Goose upon the world in the name of astronomy ? Has reason by a process of bewildered refutation of significant, of vital evidence, buried itself in a morass of sterile superstition ?"

Professor J. B. S. Haldane, F.R.S.: " The gap between science and ordinary life is artificially broadened by a few scientists who behave like so many magicians, and try to prove that science is mysterious, and a great many other people who do not want the ordinary man to know too much."

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Charles Fort: " It is within the power of anybody who does not know a hyperbola from a cosine to find out whether astronomers are led by a cloud of rubbish by day and a pillar of bosh by night."

Millikan: " Cosmic rays show that energy is being concentrated back into matter and the universe is a self-rejuvenating concern."

Jeans: " Science can give no support to such theories."

Eddington: " I am an Evolutionist, not a Multiplicationist."

Schroedinger: " We can obtain very valuable results without knowing what we are talking about."

Very valuable results being bread and butter.

Says, or rather pronounces Sir James Jeans, " If we want a concrete picture of creation we may think of the finger of God stirring the ether." To him, that thought is concrete.

It is in no way surprising that many of our leading astronomers are scientifically pious while almost all atheists and agnostics are piously scientific.

A boy's best friend is his mother.

Eric Frank Russell

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Robert Sheckley has quickly made a name for himself as a powerful and provocative short story writer in the science fiction field. Readers will doubtless be interested in knowing that a collection of some of his best stories will be published later this year by Michael Joseph Ltd. under the title of Untouched By Human Hands.

PARADISE II.

By Robert Sheckley

Illustrated by HUTCHINGS

The space station revolved around its planet, waiting. Properly speaking it was without intelligence, for intelligence was unnecessary. It had awareness, however, and certain tropisms, affinities, reactions.

It was resourceful. Its purpose was stamped into the very metal, impressed into the circuits and tubes. And perhaps the machine retained some of the emotions that had gone into its building—the wild hopes, the fears, the frenzied race against time.

But the hopes had been in vain, for the race was lost, and the great machine hung in space, incomplete and useless.

But it had awareness, and certain tropisms, affinities, reactions. It was resourceful. It knew what it needed. So it scanned space, waiting for its mission components.

The control board was covered with dials, switches and gauges, which were made of metal, plastics and quartz. Fleming, on the other

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hand, was flesh and blood and bone. It seemed impossible that any relationship could exist between them except the most perfunctory. Instead, Fleming, seemed to merge into the control board. His eyes scanned the dials with mechanical precision, his fingers became extensions of the switches. The metal seemed to become pliable under his hands, and amenable to his will. The quartz gauges gleamed red, and Fleming's eyes shone red too, with a glow that didn't seem entirely reflection.

Once the deceleration spiral had been entered, Howard settled himself comfortably in the galley. He estimated his fuel and food expenditures, plus depreciation on the ship. To the sum he added a safe third, and marked it down in a ledger. It would come in useful later, for his income tax.

They landed on the outskirts of a city, and waited for the local customs officials. No one came. They ran the standard atmosphere and micro-organism tests, and continued waiting. Still no one came. After half a day, Fleming undogged the hatch and they started toward the city.

The first skeletons, scattered across the bomb-torn concrete road, puzzled them; it seemed so untidy. What civilized people left skeletons in their roads. Why didn't someone clean up ?

The city was populated only by skeletons, thousands, millions, packed into crumbling theatres, fallen at the doorways of dusty stores, scattered across the bullet-ripped streets.

" Must have had a war on," Fleming said brightly.

In the centre of the city they found a parade ground where rank upon rank of uniformed skeletons lay upon the grass. The reviewing stands were packed with skeleton officials, skeleton officers, skeleton wives and parents. And behind the stands were skeleton children, gathered to see the fun.

" A war, all right," Fleming said, nodding his head with finality. " They lost."

" Obviously," Howard said. " But who won ?"

" What ?"

" Where are the victors ?"

At that moment the space station passed overhead, casting a shadow across the silent ranks of skeletons. Both men glanced up uneasily.

" You think everyone's dead ?" Fleming asked hopefully.

" I think we should find out."

They walked back to the ship. Fleming began to whistle out of sheer high spirits, and kicked a mound of pocked bones out of his way. " We've struck it rich," he said, grinning at Howard.

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"Not yet," Howard said cautiously. "There may be survivors—" He caught Fleming's look and smiled in spite of himself.

"It does look like a successful business trip."

Their tour of the planet was brief. The blue-green world was a bomb-splattered tomb. On every continent, the towns contained their tens of thousands of bony inhabitants, each city its millions. The plains and mountains were scattered with skeletons, and there were skeletons in the lakes, and skeletons in the forests and jungles.

"What a mess!" Fleming said at last, as they hovered over the planet. "What do you suppose the population was here?"

"I'd estimate it at nine billion, give or take a billion," Howard said.

"What do you suppose happened?"

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Howard smiled sagely. "There are three classic methods of genicide. The first is pollution of the atmosphere by poison gas. Allied to that is radio-active poisoning, mutated laboratory germs, created solely for the purpose of attacking whole populations. If they get out of hand, they can wipe out a planet."

"Think that happened here?" Fleming asked, with lively interest.

"I believe so," Howard said, wiping an apple on his arm and biting into it. "I'm no pathologist, but the marks on those bones—"

"Germs," Fleming said. He coughed involuntarily. "You don't suppose—"

"You'd be dead already, if they were still active. All this must have happened several hundred years ago, to judge by the weathering of the skeletons. The germs die for lack of a human host."

Fleming nodded emphatically. "That's made to order. Oh, it's too bad about the people. Fortunes of war and all that. But this planet really is ours!" He peered out the port at the rich green fields below. "What'll we call it, Howard?"

Howard looked at the fields, and at the wild, overgrown pastureland that bordered the concrete roads. "We might call it Paradise II," he said. "This place ought to be a farmer's heaven."

"Paradise II! That's pretty good," Fleming said. "I suppose we'll have to hire a gang to clear off those skeletons. Looks too weird-like."

Howard nodded. There were many details to be attended to. "We'll do that after—"

The space station passed over them.

"The lights!" Howard cried suddenly.

"Lights?" Fleming stared at the receding sphere.

"When we came in. Remember? Those flashing lights?"

"Right," Fleming said. "Do you suppose someone is holed up in the station?"

"We'll find out right now," Howard said grimly. He took a determined bite of his apple as Fleming turned the ship.

When they reached the space station the first thing they saw was the other ship, clinging to the station's polished metal as a spider clings to its web. It was small, a third the size of their ship, and one of its hatches was ajar.

The two men, suited and helmeted, paused in front of the hatch. Fleming seized the hatch in his gloved hands, and pulled it completely open. Cautiously they aimed their flashlights inside, looked, and jerked abruptly back. Then Howard motioned impatiently, and Fleming started in.

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There was the body of a man inside, half out of the pilot's chair, frozen forever in that unstable position. His face was fleshed enough to show his death agony, but the skin had been eaten bone deep in spots by some disease.

Piled high in the rear of the ship were dozens of wooden cases. Fleming broke one open and flashed his light inside.

"Food," Howard said.

"Must have tried to hide in the space station," Fleming said.

"Looks that way. He never made it." They left the ship quickly, a little disgusted. Skeletons were acceptable; they were self-contained entities in themselves. But this corpse was too eloquently dead.

"So who turned on the lights?" Fleming asked, on the surface of the station.

"Perhaps they were on automatic relay," Howard said doubtfully. "There couldn't be any survivors."

They walked across the surface of the station, and found the entrance.

"Shall we?" asked Fleming.

"Why bother?" Howard said quickly. "The race is dead. We might as well go back and file our claim."

"If there's even one survivor in there," Fleming reminded him, "the planets' his by law."

Howard nodded unwillingly. It would be too bad to make the long, expensive trip back to Earth, return with their surveying teams, and find someone cosily keeping house in the space station. It would be different if survivors were hiding on the planet. Legally, they would still have a valid claim. But a man in the space station, which they had neglected to examine—

"I suppose we must," Howard said, and opened the hatch.

Within, they were in total darkness. Howard turned his flashlight on Fleming. In its yellow glow, Fleming's face was completely shadowless, stylized like a primitive mask. Howard blinked, a little frightened at what he saw, for at that moment, Fleming's face was completely depersonalized.

"Air's breathable," Fleming said, and immediately regained his personality.

Howard pushed back his helmet and turned up the light. The sheer mass of the walls seemed to crush in on him. He groped in his pocket, found a radish, and popped it in his mouth for morale.

They started forward.

For half an hour they walked along a narrow, winding corridor, their flashlights pushing the darkness ahead of them. The metal floor,

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which had seemed so stable, began to creak and groan from hidden stresses, setting Howard's nerves on edge. Fleming seemed unaffected.

"This place must have been a bombing station," he remarked after a while.

"I suppose so."

"Simply tons of metal here," Fleming said conversationally, tapping one of the walls. "I suppose we'll have to sell it for junk, unless we can salvage some of the machinery."

"The price of scrap metal—" Howard began. But at that instant a section of floor opened, directly under Fleming's feet. Fleming plunged out of sight so quickly that he didn't have a chance to scream, and the section of floor slammed back into place.

Howard staggered back, as though physically struck. His flashlight seemed to blaze maniacally for a moment, then fade. Howard stood perfectly still, his hands raised, his mind caught in the timelessness of shocks.

The shock wave receded slowly, leaving Howard with a dull, pounding headache. "—is not particularly good just now," he said insanely, finishing his sentence, wishing that nothing had happened.

He stepped close to the section of floor and called, "Fleming."

There was no answer. A shudder passed over his body. He shouted, "Fleming!" at the top of his lungs, leaning over the sealed floor. He straightened up, his head pounding painfully, took a deep breath turned and trotted back to the entrance. He did not allow himself to think.

The entrance, however, was sealed, and its fused edges were still hot. Howard examined it with every appearance of interest. He touched it, tapped it, kicked it. Then he became aware of the darkness pressing against him. He whirled, perspiration pouring down his face.

"Who's there?" he shouted down the corridor. "Fleming! Can you hear me?"

There was no answer.

He shouted, "Who did this? Why did you flash the station lights? What did you do to Fleming?" He listened for a moment, then went on, sobbing for breath. "Unseal the entrance! I'll go, and I won't tell anyone!"

He waited, shining his light down the corridor, wondering what lay behind the darkness. Finally he screamed, "Why don't you open a trapdoor under me?"

He lay back against the wall, panting. No trapdoor opened. Perhaps, he thought, no trapdoor will. The thought gave him a moment's courage. Sternly he told himself that there had to be another way out. He walked back up the corridor.

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An hour later he was still walking, his flashlight stabbing ahead, and darkness creeping at his back. He had himself under control now, and his headache had subsided to a dull ache. He had begun to reason again.

The lights could have been on automatic circuit. Perhaps the trapdoor had been automatic, too. As for the self-sealing entrance—that could be a precaution in time of war, to make sure that no enemy agent could sneak in.

He knew that his reasoning wasn't too sound, but it was the best he could do. The entire situation was inexplicable. That corpse in the spaceship, the beautiful dead planet—there was a relationship, somewhere. If only he could discover where.

"Howard," a voice said.

Howard jumped back convulsively, as though he had touched a high-tension wire. Immediately his headache resumed.

"It's me," the voice said, "Fleming."

Howard flashed his light wildly in all directions, "Where? Where are you?"

"About two hundred feet down, as well as I can judge," Fleming said, his voice floating harshly down the corridor. "The audio hookup isn't very good, but it's the best I can do."

Howard sat down in the corridor, because his legs refused to hold him up. He was relieved, however. There was something sane about Fleming being two hundred feet down, something very human and understandable about an imperfect audio hookup.

"Can you get up? How can I help you?"

"You can't," Fleming said, and there was a crackle of static which Howard thought was a chuckle. "I don't seem to have much body left."

"But where is your body?" Howard insisted seriously.

"Gone, smashed in the fall. There's just enough left of me to hook into circuit."

"I see," said Howard, feeling strangely light-headed. "You're now just a brain, a pure intelligence."

"Oh, there's a little more to me than that," Fleming said. "As much as the machine needs."

Howard started to giggle nervously, for he had an image of Fleming's grey brain swimming in a pool of crystal water. He stopped himself, and said, "The machine? What machine?"

"The space station. I imagine it's the most intricate machine ever built. It flashed the lights and opened the door."

"But why?"

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"I expect to find out," Fleming said. "I'm a part of it now. Or perhaps it's a part of me. Anyhow, it needed me, because it's not really intelligent. I supply that."

"You? But the machine couldn't know you were coming!"

"I don't mean me, specifically. The man outside, in the ship, he was probably the real operator. But I'll do. We'll finish the builder's plans."

Howard calmed himself with an effort. He couldn't think any more right now. His only concern was to get out of the station, back to his ship. To do this, he had Fleming to work with; but a new, unpredictable Fleming. He sounded human enough—but was he?

"Fleming," Howard said tentatively.

"Yes, old man?"

That was encouraging. "Can you get me out of here?"

"I think so," Fleming's voice said. "I'll try."

"I'll come back with neuro-surgeons," Howard assured him. "You'll be all right."

"Don't worry about me," Fleming said. "I'm all right now."

Howard lost count of the hours he walked. One narrow corridor followed another, and dissolved into still more corridors. He grew tired, and his legs began to stiffen. As he walked, he ate. There were sandwiches in his knapsack, and he munched on them mechanically, for strength.

"Fleming," he called finally, stopping to rest.

After a long pause he heard a barely recognizable sound, like metal grating against metal.

"How much longer?"

"Not much longer," the grating, metallic voice said. "Tired?"

"Yes."

"What is all this? Is it a bomb station?"

"No. I do not know the purpose of the machine yet. I am still not entirely integrated."

"But it does have a purpose?"

"Yes." The metallic voice grated so loud that Howard winced. "I possess a beautifully functional interlocking apparatus. In temperature control alone I am capable of a range of hundreds of degrees in a micro-second, to say nothing of my chemical mixing stores, power sources, and all the rest. And, of course, my purpose."

Howard didn't like the answer. It sounded as though Fleming were identifying with the machine, merging his personality with that of the space station. He forced himself to ask, "Why don't you know what it's for yet?"

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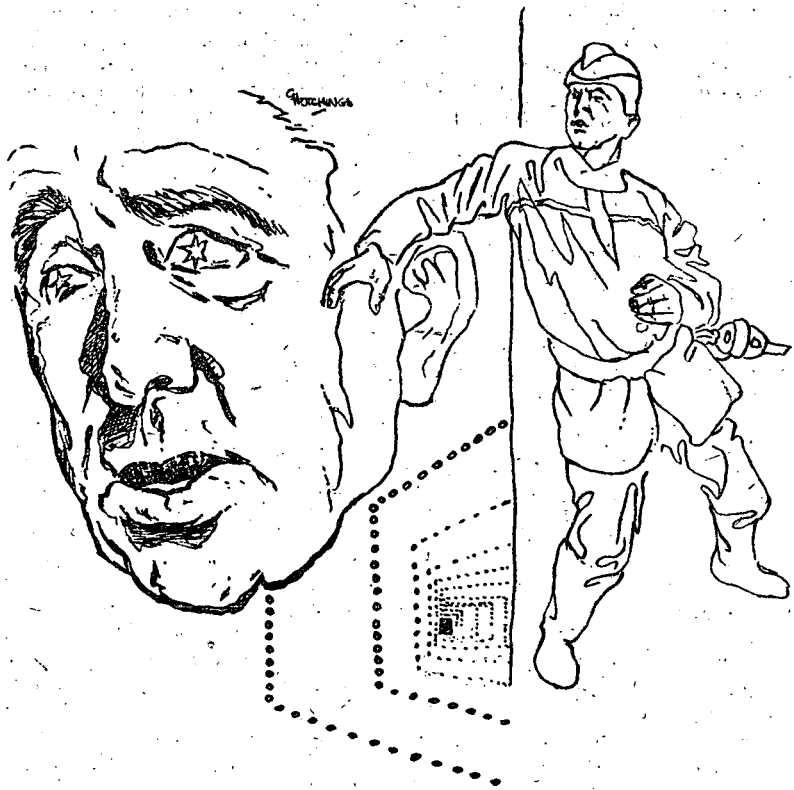

"A vital component is missing," Fleming said, after a pause. "An indispensable matrix. Besides, I do not have full control yet."

More engines began to throb into life, and the walls vibrated with the sound. Howard could feel the floor tremble under him. The station seemed to be waking up, stretching, gathering its wits. He felt as though he were in the stomach of some giant sea monster.

Howard walked for several more hours, and he left behind him a trail of apple cores, orange peels, fatty bits of meat, an empty canteen and a piece of waxed paper. He was eating constantly now, compulsively, and his hunger was dull and constant. While he ate he felt safe, for eating belonged with the space ship, and Earth.

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A section of wall slid back suddenly. Howard moved away from it.

"Go in," a voice, which he tentatively identified as Fleming's, said.

"Why? What is it?" He turned his flashlight into the hole, and saw a continuous moving strip of floor disappearing into the darkness.

"You are tired," the voice like Fleming's said. "This way is faster."

Howard wanted to run, but there was no place to go. He had to trust Fleming, or brave the darkness on either side of his flashlight.

"Go in."

Obediently Howard climbed in, and sat down on the moving track. Ahead, all he could see was darkness. He lay back.

"Do you know what the station is for yet?" he asked the darkness.

"Soon," a voice answered. "We will not fail them."

Howard didn't dare ask who it was Fleming wouldn't fail. He closed his eyes and let the darkness close around him.

The ride continued for a long time. Howard's flashlight was clamped under his arm, and its beam went straight up, reflecting against the polished metal ceiling. He munched automatically on a piece of biscuit, not tasting it, hardly aware that it was in his mouth.

Around him, the machine seemed to be talking, and it was a language he didn't understand. He heard the laboured creak of moving parts, protesting as they rubbed against each other. Then there came the liquid squirt of oil, and the pacified parts moved silently, perfectly. Engines squeaked and protested. They hesitated, coughing, then hummed pleasantly into life. And continually, through the other sounds, came the click-clack of circuits, changing, re-arranging themselves, adjusting.

But what did it mean? Lying back, his eyes closed, Howard did not know. His only touch with reality was the biscuit he had been chewing, and soon that was gone, and only a nightmare was left in its place.

He saw the skeletons marching across the planet, all the billions in sober lines, moving through the deserted cities, across the fat black fields, and out into space. They paraded past the dead pilot in his little spaceship, and the corpse stared at them enviously. Let me join you now, he asked, but the skeletons shook their heads pityingly, for the pilot is still burdened with flesh. When will the flesh slough away, when will he be free of its burden, asked the corpse, but the skeletons only shook their heads. When? When the machine is ready, its purpose learned. Then the skellton billions will be redeemed, and the corpse freed of his flesh. Through his ruined lips the corpse pleads to be taken now. But the skeletons perceive only his flesh, and his flesh cannot abandon the food piled high in the ship. Sadly, they

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march on, and the pilot waits within the ship, waiting for his flesh to melt away.

"Yes!"

Howard awakened with a start, and looked around. No skeletons, no corpse. Only the walls of the machine, close around him. He dug into his pockets, but all the food had gone. His fingers scratched up some crumbs, and he put them on his tongue.

"Yes!"

He had heard a voice! "What is it?" he asked.

"I know," the voice said triumphantly.

"Know? Know what?"

"My purpose!"

Howard jumped to his feet, flashing his light around. The sound of the metallic voice echoed around him, and he was filled with a nameless dread. It seemed horrible, suddenly, that the machine should know its purpose.

"What is your purpose?" he asked, very softly.

In answer, a brilliant light flashed on, drowning out the feeble beam of his flashlight. Howard shut his eyes and stepped backwards, almost falling.

The strip was motionless. Howard opened his eyes and found himself in a great brilliantly lighted room. Looking around, he saw that it was completely panelled with mirrors.

A hundred Howards looked at him, and he stared back. Then he whirled around.

There was no exit. But the mirrored Howards did not whirl with him. They stood silently.

Howard lifted his right hand. The other Howards kept theirs at their sides. There were no mirrors.

The hundred Howards began to walk forward, toward the centre of the room. They were unsteady on their feet, and no intelligence showed in their dull eyes. The original Howard gasped, and threw his flashlight at them. It clattered along the floor.

Instantaneously, a complete thought formed in his mind. This was the machine's purpose. Its builders had foreseen the death of their species. So they constructed the machine in space. Its purpose—to create humans, to populate the planet. It needed an operator, of course, and the real operator never reached it. And it needed a matrix . . .

But these prototype Howards were obviously without intelligence. They milled around the room, moving automatically, barely able to control their limbs. And the original Howard discovered, almost as soon as the thought was born, that he was terribly wrong.

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The ceiling opened up. Giant hooks descended, knives glistening with steam slid down. The walls opened, showing gigantic wheels and gears, blazing furnaces, frosty white surfaces. More and more Howards marched into the room, and the great knives and hooks cut into them, dragging Howard's brothers toward the open walls.

Not one of them screamed except the original Howard.

"Fleming!" he shrieked. "Not me. Not me, Fleming!"

Now it all added up; the space station, built at a time when war was decimating the planet. The operator, who had reached the machine only to die before he could enter. And his cargo of food . . . which, as operator, he would never have eaten.

Of course! The population of the planet had been nine or ten billion! Starvation must have driven them to this final war. And all the time the builders of the machine fought against time and disease, trying to save their race . . .

But couldn't Fleming see that he was the wrong matrix?

The Fleming-machine could not, for Howard fulfilled all the conditions. The last thing Howard saw was the sterile surface of a knife flashing toward him.

And the Fleming-machine processed the milling Howards, cut and sliced them, deep-froze and packaged them neatly, into great stacks of fried Howard, roast Howard, Howard with cream sauce, Howard with brown sauce, three-minute boiled Howard, Howard on the half-shell, Howard with pilaff, and especially Howard salad.

The food-duplication process was a success! The war could end, because now there was more than enough food for everyone. Food! Food! Food for the starving billions on Paradise II!

Robert Sheckley

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Mr. Guthrie's first short story in our pages — "Samson" in No. 35— posed the problem of Man unsuccessfully attempting to get into space. In the story which follows, which is not a sequel, he answers the question he put forward in the earlier story.

NO SPACE FOR ME

By Alan Guthrie

Now that it's all over and the whole top-heavy technician-security lay-out has gone back to where it should never have left, maybe we can get down to the real business. In a way the whole thing should never have happened. Uncounted man-hours, unknown amounts of money, material and research, an entire field of literature and the endless dreams of men and boys, women and children, have all gone up in a beautiful cloud of rosy smoke.

The fact that the smoke had a mushroom pattern had nothing to do with it.

So the toys have been dismantled, the drawing boards cleared, monkeys, guinea pigs and rats given a new lease on life, and men brought smack up against the one solid fact they can no longer deny.

There is no escape.

Not to a new nation. Not to a new continent. Not to the Moon or another planet. Especially not to another planet.

Space travel is the deadest of dead ducks.

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It's funny in a way that no one ever thought of what would happen if it all turned out to be a dream. The magazines started it, of course, or maybe it was the old-timers, Verne, Wells, the rest of the early writers who lifted up their eyes and asked 'What would happen if . . ? It made good reading, too good, because every second hack, even the long-haired intellectuals jumped on the bandwagon and the corn grew brightly yellow in the pulp field for over a generation before old man Reality slashed it down with his scythe of fact.

But the hacks weren't the only ones to cash in. The toy manufacturers had their harvest. Every kid on the street wore a space helmet, drooled over the lurid comics which were funny in name only, and hefted an atomic blaster, a sonic beam gun, or a disintegrator pistol. Television did what the magazines couldn't do, they brought space heroes into the home regardless, and even the cinema followed the trend upwards and outwards to the stars. Space travel was a fact—on paper.

Luckily that's just where it stayed.

I came into it just about the time when the few serious statesmen left were worrying about the mounting incidence of radioactive particles in the upper atmosphere. Billy Graham was still insisting that we were all on the edge of a tremendous religious revival. The V.2's were old stuff, atomic power a fact, flying saucers accepted with the same indifference as the cobalt bomb, and the whole world was tottering on its merry way to a flaming hell.

They called me a liaison officer. That means that if Sam wanted something from Joe, he had to ask me to get it for him. If the military wanted something from the civilian technicians, I was the in-between knock-about-man. Sometimes I managed to kid myself that what I did was important but not often. Call me a stooge and you'd be about right.

Still, it provided cakes and beer, kept me close to the centre of things, and saved me wearing out my own clothes. The money wasn't too bad either, good enough to marry on, though not good enough to compensate for the slow but inevitable wrecking of my mind. There is a limit to what any man can stand and the rat-race at Colhaven was something no genius could have ever consciously designed. It just grew.

Ask the chemists the formulae of aspirin and they'd refer you to Security. Ask a guard the time and he'd look at you as though you were a spy. Talk about escape velocities to an engineer and he'd scream sabotage. For every man actually working with his hands or brain there were three desk-polishers, two guards, and a half dozen Security men. I was caught up in the middle of the whole beautiful

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mess and, because of that, probably knew more about what was going on than anyone else. Not that it did me any good.

"Fear," explained old Professor Makenton to me during a coffee and bun session. "Everyone here is torn apart by fear."

I didn't argue with him. Makenton was a psychologist and had been with the project fifteen years. Don't ask me what they wanted with a psychologist. I don't think even Makenton knew but they paid him, housed him, fed and clothed him, and left him pretty well alone. He didn't mind. He told me once that he was saving up to buy a South Sea island and, looking at some of the travel brochures, I couldn't blame him.

"Why fear?" I said. "You mean fear of spies, or sabotage, or someone else beating us to it?"

"Partly that." The old man had a habit of sipping his coffee from a spoon. Sometimes he'd drink a full cup that way and he always chose the most awkward times to indulge himself. He did it then.

"Why the hell don't you drink it and get it over with!" I knew him well enough to allow a little impatience. "What are you getting at?"

"A residual compulsion from childhood," he sipped more coffee. "Based on the mother-teat relationship in infancy. I often wonder whether the craving for the average individual to hold something in his mouth, a cigarette, a pipe, a pencil or a straw, is because of artificial feeding when young." He set down his spoon and nodded as if he had just completed a difficult analysis. "You were saying?"

"You were saying," I corrected. "Why is everyone here suffering from fear?"

"Not just here," he said mildly. "Everyone in the world. Fear rules us all but it's more apparent here because we are nearer to the problem."

I gave up. I knew Makenton and knew that he like to press a few buttons at times and study the reaction. I've seen him make a man almost insane with fury with a few, well-chosen words, and I've seen him calm a man on the edge of breakdown in the same way. I didn't want to be experimented on.

"You know, John," he said quietly. "This civilisation is probably the most complex the world has ever known. I say 'probably' because we have no reason to make a generalisation. There could have been others, you know."

"Atlantis?" I shrugged at his expression. "Mu? Something like that?"

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"Perhaps." He reached for his spoon, thought better of it, and stared at me through his thick, old-fashioned spectacles. "We have an incredibly intermeshed system of communications. Books, radio, television, films, pulps, the whole complexity of written and vocalised words. They don't just communicate ideas, you know, John. They do something else. They educate."

"So?" I shifted a little on the hard chair. I'm no university man but that doesn't mean I'm dumb either. Working with scientists as I do a lot of knowledge, wisdom, call it what you like, has rubbed off on me. I can read too.

"They educate," repeated Makenton as if he were stating one of the Ancient Truths. "But what if that education is of the wrong kind?"

"Determine 'wrong' and 'right' before making such bald statements," I said severely. "Both are man-made concepts without real meaning."

"You're thinking of 'sin' and 'virtue,' he said gently. "Wrong and right are different altogether. Tell a man that he isn't influenced by the force of gravity and that is wrong teaching. He might jump from the top of a building and kill himself because of it."

"Semantics," I said impatiently. "This discussion could go on forever. Why is everyone afraid?"

"Because of false education." He sighed at my expression. "The atom bomb is dangerous, John. Do you admit that?"

"Yes."

"And yet most people believe that it isn't as bad as it is supposed to be. That is a product of wrong education. Each nation has stockpiled enough alphabet bombs to literally blast the planet to ash and kill every living thing. That is a fact, a true fact, but could you make anyone agree with you? Consciously I mean?"

"No." I remembered some of the arguments I'd had with my brother-in-law. He was a man with a pathetic belief in Authority. If the Government said that the danger was over-rated, then he believed it. If they had told him that he was dead, he would have believed that too. He was that kind of a man.

"Exactly." Makenton toyed with his spoon. "Note that I used the word 'consciously.' I did it for a reason. Consciously they will deny the truth, but subconsciously . . ." He tapped the back of his head with the spoon, "Down inside here, they know full well that they are living on borrowed time. So they are afraid. That fear must be repressed by a vocal denial and, to prove that there is nothing to fear, they deliberately make and explode more bombs. Why not? If they once admit that there is a danger then they must admit that they are wholly at the mercy of every other nation in the world."

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"Interesting," I said politely. "But what's that got to do with us?"

"When a man is afraid of something the natural result is for him to escape that fear. He can do it by converting the fear to anger and destroying the thing he is afraid of—or by running away." Makenton shrugged. "We won't destroy the atom bombs."

I left him sipping at his spoon, the reflected light from his thick lenses making him look like some friendly gargoyle. A strange man. He knew just what went on inside a man's skull—or was supposed to, and at the same time wanted to run away to a lush tropical island. I reckoned that I could make a stab at some psycho-analysis myself.

Mary was watching the television when I got home. Home in this case being a prefab belonging to the Government and some furniture belonging to us. I dropped into a chair and stared at a colourful character with more brawn than brain desperately fighting for his honour with a spider woman from Arcturus. She was human, aside from extended eyelashes, extended eyebrows, extended lips and an extended figure. The fact that the Arcturians were supposed to be oviparous with a yen for laying their eggs inside a still-living hunk of meat hadn't disturbed the producers one bit. More wrong education but it didn't seem to matter.

Mary sighed as the beefcake suddenly slumped to simulated unconsciousness in the arms of the spider woman. The screen flickered to show a row of dentures, a too-pretty face, and a large cartoon of the breakfast food sponsored by the programme. Personally I have doubts as to whether any cereal which is claimed both to be packed full of nutrition and at the same time to aid constipation by its delicate roughage is good for anything walking upright. I snapped the switch and watched the announcer mouth a few words in silence before fading from the sanctity of my home.

"Busy day, dear?" Mary isn't as intelligent as some women but she's red hot on elementary psychology. I let her run her fingers through my hair a few times before moving away. I didn't like it, but with the way my hair was falling out lately I thought that I might as well let her enjoy herself while she could.

"Lousy." I didn't go into details. "And you?"

"Not bad. There's a new serial started, Captain Carson and the Space Monsters." She pulled my left ear. "How much longer will it be, dear?"

"How much longer will what be?"

"Space travel, silly. What else did you think I meant?"

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And that was it. Not ' is it possible ?' Not ' when can we hope ?' But a flat statement containing impatience tinged with annoyance at having to wait so long. I couldn't blame her. With television drumming it in hour after hour, with the pulps and slicks accepting the thing as done and concerned only with what might happen afterwards, with every boy and man firmly convinced that the Moon trip was as good as over and done with and where-do-we-go-from-here ? Mary was a normal result of communication-education.

The wrong sort, of course, but that was nothing new.

The trouble was that she wasn't alone. Even the Directors of the project suffered the same way. They knew the troubles but they thought they knew all the answers. A V.2 had shown the way. Simply put in more fuel and the thing would go higher. Make it bigger to hold the extra load and use a more powerful fuel. Space travel was simply a matter of adding A and B to get the required result. No one then had even given a thought to X, the unknown quantity; that was something old man Realism was saving for the pay-off.

The first hint came when we finally managed to plant a war-head on the Moon.

The flash was brilliant, we could easily see it through the 'scopes and most people saw it with the naked eye. A ship had finally landed on the Moon and the reaction was something we should have expected.

So what-?

No one danced in the streets. No one went haywire with delight that Man had finally managed to break the invisible chains of gravitation holding him down to his own backyard. The thing should have been done years ago and, aside from a rash of space-ship novelties, the public accepted it with bored indifference. The concept of space travel was now so old that, to the average man, what we had done was nothing new.

To us at Colhaven it meant a sudden spurt of work. Makenton was the one who felt it most. They had finally got round to using their psychologist and it was easy to guess just what they wanted. I went into his office one day and found him surrounded with books, files, cards, oddly shaped pieces of plastic and twisted bits of wire. He had a lot of other stuff too, some of it vaguely familiar but most of it looking as if it had come straight from the covers of the pulps. I cleared a corner of his desk and sat down.

"How's it going ?"

" So, so." He riffled among his papers and produced an example of the daily press. " Seen the news ?"

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I nodded. I knew what he meant and he wasn't talking about anything concerned with long distances in tiny ships. Three atom bombs had been exploded in a new series of ' tests ' despite the warnings of the savants that the released radio-active particles would increase the danger of radiation poisoning to high-level flight aircraft. The Government's response was to promise a new filter to be fitted to all stratoplanes.

Not that the news made the headlines. They were reserved for the amorous adventures of a movie star who had just taken her eighth husband ' for life.' Life in her case probably meant six months. Still, it was what the public wanted—or what they had to accept—and the simpering beauty had easily managed to squeeze the uninteresting case of a man who had beaten his ten-year old girl to death with a red hot poker to the back pages. I pushed the rag away.

" Selection have ordered me to work with you, Mac." I knew that he didn't like being called ' Mac ' but then I didn't like watching him sip coffee from a spoon. " Cleared the first bunch yet ?"

" Yes." He didn't seem happy about it.

" When do they take-off ?"

" Security," he said automatically, then frowned. " I don't know, as soon as they get the ships ready, I suppose." He glared down at the newspaper. " The fools !" he muttered, and I knew that he wasn't talking about the proposed crews for the manned flights.

" They'll learn sense in time." I didn't know whether I was trying to soothe him or to convince myself. " We're still well on the safe side of the danger limit."

" For how long ?" He stabbed his finger at the paper. " We only know what they choose to tell us. Three more bombs exploded—they say. It could have been ten or twenty and what about the other nations ? Won't they want to show their power too ?" He took off his glasses and wiped at the thick lenses. " I tell you, John, we're rapidly turning the world into a scrap heap that will be unfit for both us and any future generations to live in."

" Maybe." Even knowing what I did I still couldn't really accept the prospect. " In that case it's lucky for us that we've got a way out." I jerked my thumb towards the ceiling. " No matter what happens here we've still got a universe to play around in."

" You too ?" His reaction startled me, there was no mistaking the contempt in his voice. He saw my expression and shrugged. " You're not to be blamed, I suppose. With our system of communication-education you can't help the way you think, but it's wrong, John. As wrong as all hell !"

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He was shaking a little, I had never seen him so upset before, and I didn't know whether he was angry at me or at the world in general. I suggested coffee and he seemed glad to get away. It wasn't until he had sipped half a cup with the inevitable spoon that he returned to the subject.

"In all history, John," he said as if he were giving a lecture, "there has always been a way of escape. If the crops failed, or the local Baron became too greedy, or if there was a flood, or a volcano, or a famine, then the people could always pack up and move to somewhere else. Population pressure had something to do with it, but not nearly as much as people think. Most of the new lands were opened up and colonised because people made a mess of things and wanted a new start. That way of thinking became a part of us. We could always move—we thought, but now we've reached a point where there's nowhere to move to."

"Wrong," I said, and I was serious. "We do have somewhere else. Mars, Venus, Jupiter, the whole solar system and after that the entire universe. We don't have to stay at home any more, not if we don't want to."

"Lucky for us," he said drily.

"Maybe it isn't luck." He had touched on one of my favourite subjects. "Things happen because they have to happen. Steam engine time, you know."

"I know."

"Well, it all fits in. We used all the forests and then discovered coal. We used all the coal and made do with oil. Then electric, hydro-electric power came just in time. Then atomic power stations. The same thing applies to transportation, food, raw materials, everything. When we need a new source of supply we find it. When we need more living space we find that too. Simple."

"Dangerous," he corrected, "not simple. Dangerous thinking and dangerous education. Wrong education."

"Why? What's the matter with it?"

"Condition a man to think that, no matter what he does, everything will turn out all right in the end and you have created a problem without solution. Look at the dust bowls, the deserts, the ruined fields and agricultural lands. Men destroyed them because there were new lands over the horizon and it didn't matter what they did to their own backyard. Why trouble to clean up, conserve, think of tomorrow and cut your profits when you can always move? Now do you see?"

I did and I didn't like the picture one bit. Makenton was right, we had reached the limit of expansion on our own planet and even now we were trying to undo the criminal misuse of natural products by

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reforestation and irrigation. I frowned, trying to put a thought into words, and then gave up trying as Makenton did it for me.

"Hasn't it ever struck you as odd that the concept of space travel blossomed so swiftly? Remember the first magazines came out long before the atomic age. Men, in fiction, were colonising the stars before the first elementary rockets were built and long before the V.2s. Are we in spaceship time? Is space travel coming because it *has* to come? Or is the entire thing a wish-fulfillment? A hopeless longing to escape from the mess we've made, to get away and make a fresh start somewhere else. What has made an entire generation grow up in the firm belief that escape from this world is only a matter of time? Is it preparation for the Great Day, or is it a form of self-delusion?"

"Something tells me that you don't like putting the cart before the horse." I tried to be casual but Makenton remained deadly serious.

"I don't like wrong education," he said quietly. "I don't like to see children told that they don't have to tidy up after them because they'll soon be moving and the mess doesn't matter. Remember what I told you about fear? You can either run from it or convert it into hate and destroy the cause of the fear. A sane man doesn't run from what he is afraid of, he tries to understand it, live with it, or render it harmless. Running away is an admission of failure."

"And you think that we're all wanting to run away?" I nodded as I thought about it, remembering Mary and her calm acceptance of the fact that space travel and new worlds were ours for the taking. To her space travel was real, far more real than the repeated threat of the atom bombs. She would dismiss the probability of radiation poisoning with a shrug but not the loss of her dream world. How could she? The television, the magazines, the newspapers never showed victims of radiation. They always showed beefcake and cheesecake with transparent space suits somewhere on an exotic world. To Mary a rocket ship was as commonplace as a bus. The fact that, as yet, there were no rocket ships didn't make the slightest difference. And in that she wasn't alone.

A generation is a long time. Children grown to be adults with children of their own and the continual publicity of extra-terrestrial adventures had increased, not decreased during that time so that kids now spoke of a 'Tri-Planet League,' discussed B.E.M.s, escape velocities, astrogation, the Weisaker theory and the probability of 'hyperflight' with the same easy nonchalance with which other youngsters had spoke of pirates, cowboys, soldiers and hunters. But those things had been real and had belonged to the past while the whole elaboration of space adventure was unreal and belonged to a vaguely undetermined future.

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Children grow up to become men and, if they were firm in the belief that, no matter what they did they could always move to another world, then things could become far from pleasant.

I thought of the exploded atom bombs, the rising incidence of radiation in the upper atmosphere, the slap-happy way the governments of the world conducted their affairs, the press and radio propaganda and the spillage from the atomic piles. I thought of the cobalt bomb and what it would do if ever used. I thought of Mary and the kids we hoped to have one day and I thought of Makenton who knew more than he told and who was nobody's fool and yet who wanted to buy a tropical island and get-away-from-it-all.

Thinking about it didn't make me happy.

The first manned rocket went up and didn't come down again. The second vanished in a puff of incandescent glory and the third shattered itself to ruin on the barren surface of the Moon. The next two simply vanished, cutting radio contact and disappearing into silence and blackness. And then the race was on.

Everyone wanted to get to the Moon and build there. Every nation with enough money to build a ship and men to man it entered the race and tried to grab a piece of the best launching platform for war missiles God had ever built. None of them succeeded. We watched them crash against Luna or explode, or just disappear. We never saw any of them come back again.

So we stopped, went back a bit, and started again. A and B seemed to be working as they should but X, that old unknown quantity, had become suddenly more important than either of the other two. We had to find out what X was.

I was kept pretty busy at that time running from Sam to Joe, from Joe to Tom, from Department to Department, trying to look as important as they thought I was and yet knowing all the time that I could have dropped dead and that a phone could have taken over without losing a minute. Makenton was kept busy too. I saw him sometimes, older looking, strained, his eyes haunted as he processed and tested the eager volunteers to man the rockets, trying to fit human flesh and blood and brain into the same rigid moulds the engineers had used in designing the ships themselves.

We loaded a ship with monitoring instruments, squeezed in a crew, sent it out and brought it back again all by remote control. The ship worked perfectly. The men landed hopelessly insane.

We tried it again and again, using different combinations of personnel and take-off speeds. No improvement. We stuck at it trying heterodyning shielding, metallic shielding, plastic shielding, every damn sort

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and kind of shielding possible to imagine. No improvement. We tried euphoric drugs, compulsive drugs, sedatives, hypnotism, pre-frontal lobotomy, shock therapy, insulin treatment, plain alcohol and even plainer abuse. We even tried prayers.

We wasted our time.

We didn't give up, of course, we couldn't. We built a new wing on the hospital, asked for more volunteers, and really got down to it. Ship after ship went screaming up towards the Moon, all under remote control, all manned by living, breathing men. The ships worked perfectly. The engineers were as proud as any men had a right to be. They had done their job and done it well. The ships could make the trip into outer space—but the men couldn't.

And it wasn't only us. All over the world the sky was split by rocket trails as every nation tried to do what its neighbours couldn't. God alone knows how many men died or what was done to them in the name of expediency. Even now I don't like to think of the frenzy which gripped Colhaven as more and more volunteers entered the gates to wind up on a hospital cot or in the crematorium. Because the thing had got out of hand. For too long we had looked towards the stars and mentally sold each other their real estate. For too long men had lived with the conviction that space flight was one of those things which was coming, had almost come, *had* to come. Space flight had arrived at last but with it had come old man Reality with his little X. The unknown quantity was Man himself.

And Man couldn't take it.

The end came after we had tried the virtues of fetishes, drum magic, and purification by fire—we had got that desperate, and when science proved valueless, then we had turned to any and every nut with an idea which sounded at least one per cent probable. The other nations were even worse. I heard afterwards that at least one other country had tried Paganism and staffed a rocket with Virgins sanctified to the Sun God. Crazy? Maybe, but was it so crazy after all? As crazy say as educating our young to live in a dream world or committing racial suicide with released radio-actives?

Not that it mattered. Nothing could break the one fact no one had ever thought of. Man couldn't go into space. Period. Man was confined to his own backyard for ever and ever. Period. The bubble had burst, the dream was over.

There was no more escape.

Makenton had a theory, every psychologist had a theory, every priest, preacher, evangelist, hot-gospeller, and bar-philosopher had his theory. Theories were so cheap that you could have collected a dozen for the

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mere trouble of listening, but Makenton's was different. Makenton's made sense.

"Man was born to a certain environment," he said one day over coffee. That was just before the project was dismantled and we all went home. "He can live within certain variations of temperature, air pressure, radiation, diet, humidity, and psychological directives. He can *only* live within those variations. Take him out of them and he will die or, what is much the same thing, go insane. Space is not suited to Man. It isn't physical, we can protect the crews, but we can't protect their minds. They cannot live there so—they don't."

"The Mother Womb idea?" I had been reading and wanted to show off. "Is that it?"

"Partially. Earth is our mother, of course, in more senses of the word than one. While we remain within her bosom we are safe. Away from it, outside the magnetic or gravitational fields, or wherever the line of demarcation is, Man is not safe. He knows it, subconsciously of course, and his primitive instincts assert themselves. He escapes into death or insanity." Makenton shrugged. "We shouldn't grumble too much. After all we wouldn't be surprised if we found that men couldn't live naked at the poles or unprotected at the bottom of the seas, and those conditions are far nearer to our norm than those applying in space." He played with his spoon. "I don't know just what it is. I don't know just what death is either, or Heaven, or Hell, or magnetism, or how the regeneration organs of a lobster work. There is a lot I don't know, a lot none of us know. Maybe, by the time we find out, we'll know why men can't live in space. Why, when they get a certain distance from Earth, they go insane or die. But they do and that's all there is to it."

And that was that.

The space heroes died, of course, and the television shows became a little more sane. Not much, that would be asking for the impossible, but even a little realism is better than none. The space ship novelties vanished together with the atomic blasters, the sonic beam guns, the disintegrator pistols and the Junior Space Cadet goldfish bowls. An entire field of literature almost died completely, I say almost because there is still a demand for adult fairy tales but now the heroes use swords instead of blasters and travel back through time instead of across the galaxy. The film companies scrapped their proposed space operas and went in for costume dramas instead. The kid-talk reverted back to cowboys and pirates, the previous 'Tri-Planet League' stuff dying for lack of fuel. Most of the hacks turned to western or detective or period writing, some even took regular work, and many of them concentrated on sheer fantasy and fable. A surprising number of them

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made a good living out of children's stories, but that should have been expected, most of them had been writing kid-stuff for years.

And that was all.

Talk of space travel now and you are unpopular. The memory is too recent, and no one likes being reminded of earlier foolishness. Space travel isn't, will never be, and all the endless speculation, extrapolation, supposition of the past generation is like a bad dream which wasted a hell of a lot of time.

Personally I'm rather glad and, together with every other intelligent persons, I welcome the change.

Why ?

Well, Mary is expecting and I want my kid to grow up with a good chance that he'll die of old age. Now there is no escape maybe we can hope to get back to the real business of clearing up the mess we've made of the world.

After all, it's the only one we're going to have.

Alan Guthrie

THE LITERARY LINE-UP

Longer stories are prevalent next month and we start off with another novelette by popular J. T. McIntosh entitled "The Way Home," centred around a small exploratory party finding a liveable planet in the depths of the Galaxy from which inexplicably they cannot leave—their ship having been booby-trapped in a most cunning manner by the local inhabitants.

Lester del Rey is featured with a long story which is undoubtedly one of the finest alien stories he has yet produced; and E. C. Tubb returns to the short story section together with Kenneth Bulmer and others. There will be another cover painting by Bradshaw, too.

Story ratings for No. 34 were :

1. Star Ship Part 1 .... E. C. Tubb.
2. The Real McCoy .... Alan Barclay.
3. Visitors' Book .... John Brunner.
4. No Place For Tears .... R. H. Godfrey.
5. Forgetfulness .... Phillip Martyn.
6. Asylum .... Kenneth Bulmer.
7. The Other Door .... Arthur Coster.

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Atomic disintegration does not necessarily mean the explosion of A- or H-bombs despite the number of tests that are now being carried out. As Mr. Newman explains in this month's article the number of peaceful uses to which the breakdown of atomic structures can be put are innumerable—and of far greater value to Mankind.

RADIO-ISOTOPES

By John Newman

Within a year of the destruction of Horishima the first shipment of an artificial radio-active isotope was sent from Oak Ridge to the research laboratories of a cancer hospital in America. Within two years similar shipments were made from the Gleep atomic pile at Harwell and now their production is carried on an ever increasing scale in Canada, France, Norway and the U.S.S.R. The plutonium pile at Windscale and BEPO at Harwell are now also being used for their manufacture in Great Britain. These isotopes are not used for killing men but as weapons against disease and ignorance. They are employed in industrial processes and in the search for new knowledge being carried on all over the World.

Radio-active isotopes, usually called radio-isotopes, have been used for their radiation properties ever since the discovery of radium. Some are found naturally in minerals but are difficult to concentrate and only a few of the natural ones are active; even these are being replaced by artificial radio-isotopes. Radium has been used for many years as the most effective destroyer of cancer cells but, recently, radio-cobalt that has been made in an atomic pile has been used instead. It has the advantage of being cheaper, not so dangerous, easy to replace and available in large quantities. Radio-gold and phosphorous are now being used to treat particular types of cancer. Both become innocuous within a few days and are not poisonous in small doses.

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Isotopes are different forms of elements, the difference being due to a variation in the number of neutrons present in the nucleus. Radio-isotopes are unstable ones that tend to breakdown giving atomic radiation. No two isotopes are exactly similar; all differ in the type and intensity of the radiation that they emit, in the products to which they decay and in their half-lives. Like living creatures, not all radio-atoms of one type die at the same time, although all of them do so sooner or later. The time taken for half of them to disintegrate is called the half-life and ranges from a fraction of a second for the very unstable useless ones to milions of years for the more stable. However, the most useful have half-lives between 12 hours and 10,000 years.

Six hundred radio-isotopes are now known but only 100 can be made in atomic piles by neutron absorbtion processes. A nuclear reactor is like a furnace that cooks atoms in a gas of neutrons, large quantities being irradiated at the same time to give a cheap product. Over a billion neutrons a second pass through every square centimetre of the core of a nuclear reactor. The powders or metals are sealed in aluminium cans and left in the piles for any time between a day and, for radio-carbon, a year. Radio-sodium is made from salt and radio-gold from gold leaf but radio-carbon is made from nitrogen, a true transmutation of an element.

Some radio-isotopes are made in accelerator machines such as cyclotrons but it is an expensive method and only gives a small amount of material with a small activity. A large number of radio-isotopes with atomic numbers between 30 and 60 can be separated from the fission products of uranium and plutonium, the ashes from nuclear reactors. But, in many cases, there are no known uses for these radio-isotopes and the problem is how to get rid of them so that they won't do any harm.

A lot of useless radio-active material is dumped in the ocean or buried in concrete tanks until its harmful radiation can die down to a safer figure. However, many more uses are being found for these intensely radio-active ashes and, particularly if they are to be used for the large scale sterilization of food, it is probable that demand will gradually outstrip supply.

All elements, except nitrogen and oxygen, have at least one usable radio-isotope but, for very high activities, radio-isotopes must be concentrated by removing the inactive material. This has to be done in remotely controlled apparatus and is expensive. Even so, there is an ever increasing number of shipments of radio-isotopes from Harwell and a new radio-chemical centre has this year been opened at Amersham to handle chemicals synthesised

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from radio-isotopes. Deliveries are made from there to 36 different countries.

Simple chemicals are prepared using normal chemistry techniques but complex organic materials have to be made by growing plants and algae in air containing radio-carbon dioxide. Radio-active sugars, proteins and amino-acids are then obtained from the atomic harvest.

The unit of radio-activity is the curie, named in honour of Madame Curie, and is the amount of radio-activity of one gram of radium. It is equivalent to just over 2 million million atomic disintegrations per minute. Since this is too large for most work it is more convenient to use a measure that is a thousandth of this, the millicurie. Even this amounts to 37 million disintegrations per second.

A Geiger counter can accurately count 100 disintegrations per minute of a beta ray emitter, so one curie of a radio-isotope can be diluted 20,000 million times and still be analysed fairly accurately.

The most ingenious way in which radio-isotopes are utilised takes advantage of this great accuracy at great dilution and is usually known as the tracer method. It has only been recently that a large variety of artificial radio-isotopes has enabled it to be fully developed.

Tracers are small quantities of radio-isotopes that can be detected when mixed with, or shielded by, inert material and, because of their radiation, their position and concentration can be easily found without destroying specimens by analysis. The technique was first used in 1913 when the flow of river water was followed by adding radium at one point and analysing samples at other points; a similar method is now used by plumbers looking for leaks in water pipes. A solution of radio-iodine is pumped into the pipe and its position followed by a Geiger counter until the leak is reached. The pipe is then flushed out and the floor dug up at the exact spot of the leak.

"Go-Devils" are scrapers pushed along inside pipe-lines to clean the metal and, when they get stuck, are difficult to locate. The Anglo-Iranium Oil Company now "tag" their "Go-Devils" with a 75 millicurie piece of radio-cobalt and, when one is lost, an operator with a Geiger counter can quickly find it, even if the pipe is several feet underground.

Insecticides such as D.D.T. are poisonous to humans but it is very difficult to analyse the tiny quantities found in food. D.D.T. was irradiated in an atomic pile until it became radio-active before

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being used on wheat. It was then traced through flour into the bodies of animals that ate it. When flies in California became immune to D.D.T. some were made radio-active by feeding them with a similar D.D.T. Thin slices of them were cut and placed on photographic plates so that their own radiation gave pictures of the tissues containing the tracer. These were analysed and found to contain no D.D.T.; the flies had converted it into a harmless compound.

Radio-iodine, with a half-life of 8 days, is being increasingly used in medicine. Normal iodine is absorbed by the thyroid gland and this can be made radio-active by using a mixture of normal and radio-iodine. The size and shape of the thyroid gland is found by plotting the position of the tracer and cancer of the thyroid can be treated by the beta and gamma rays given out by heavy doses of radio-iodine.

The efficiency and uniformity of the mixing of such things as feeding stuffs, vitamins and paper pulp can be measured by adding a tracer to one of the components of the mixture. The tracer is always one with a short half-life so that the radiation quickly dies down. The ventilation of factories is tested by releasing radio-bromine or krypton in the ventilation system and finding to which parts of the factory that it penetrates. Radon, the radio-isotope gas given off by radium, is used to study the flow of air through wind tunnels and of gas in blast furnaces.

Oil soluble radio-antimony compounds have been used to follow the flow of oil in the distilling towers of oil refineries and radio-sodium is used to test the water condensers of large power plants. Radio-antimony enables two or more different oils to be sent through one pipeline. The radio-isotope is added between the two oils and operates a warning Geiger counter at the end of the pipe, automatically delivering the oils into separate tanks.

Radio-carbon 14 has a half-life of almost 6,000 years and its price in the U.S.A., where it can be bought without a licence, is only $36 a millicurie. It is the most versatile radio-isotope now being used and has tremendous possibilities in medical and biological research. It has already been used to obtain new knowledge of the process of photosynthesis, the way in which plants use water, carbon dioxide and sunlight to build up complex molecules. Any new understanding of this baffling process is a great help towards increasing its efficiency and so improving the world's supplies of food and fuel. With sufficient knowledge it will be possible to synthesise food in factories or by growing algae in transparent tubes exposed to the sun.

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Radio-carbon is continually being made in the air by cosmic rays hitting nitrogen atoms and it is absorbed by living plants and animals. Scientists now accurately determine the age of fossils and archeological specimens by measuring the amount of radio-carbon in them. No more is absorbed after death and it slowly disappears, halving itself every 6,000 years. Radio-carbon is also used to trace the slow moving currents of water that flow along the ocean beds from the Poles to the Equator. It is absorbed at the surface near the Poles and loses its activity deep under the warmer layers. These are the slowest moving of all ocean currents, travelling only a few hundred yards a year.

Very small quantities of impurities can be analysed by irradiating mixtures in an atomic pile and characterising the isotopes so formed. This gives very good results with arsenic and was used to show that minute quantities of arsenic in germanium affected its use in transistors. In France, the dates when a man was poisoned with arsenic were found by making samples of his hair radio-active in an atomic pile and placing them on a photographic plate. The positions of greatest activity showed where the arsenic was and, knowing the speed at which hair grows, the dates of the poisonings were calculated.

The study of friction between surfaces has been greatly helped by the use of radio-isotopes. Gears, piston rings and bearings are made radio-active and, when in use, the metal that is worn off collects in the oil and is continually measured by a Geiger counter without the need for dismantling the engine.

Radio-isotopes are used in paints, floor polishes and rubber tyres to find their resistance to wear; a variation of the method is used to find out when the lining of blast furnaces are corroded. A pellet of radio-cobalt is cemented under three feet of the bricks and its radiation regularly checked. Once the brickwork has worn away the pellet dissolves in the molten iron and the radio-activity disappears, showing that the lining needs renewing.

The main use of radio-isotopes, apart from tracers, is as a source of atomic radiation. Radio-cobalt, sometimes known as "the poor man's radium," gives powerful gamma rays and is replacing radium and X-ray machines for many purposes. Intense sources, equivalent to millions of grams of radium, can be made with a price of only a few pounds per gram. Its half-life is only 5 years but it can easily be reactivated by putting back into an atomic pile. It is used to destroy cancer, to cause mutations in plants and insects and for gamma ray photographs, similar to X-ray photo-

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graphs, of up to 6 inch thick metal castings and joints. It is less clumsy than X-rays, needs no electrical power and can be used underwater. The weaker gamma rays of radio-iridium are used for thinner steel and radio-thorium for aluminium and magnesium alloys.

Experiments are now being carried out using radio-cobalt to sterilise food, the containers or carcases merely being exposed to its radiation for a few minutes. The flavour of the food is unfortunately changed but some scientists think that people will eventually acquire a taste for it. Penicillin is very easily decomposed by heat and the method would be most effective in sterilizing penicillin already packed in phials. The surface of foods has been kept sterile by wrapping them in radio-strontium metal foils that only emit easily absorbed beta radiation.

Beta radiation from radio-thallium is used to ionise air so that it conducts electricity and so ground static electrical charges, especially those in the textile industry that cause dust to stick to fabrics.

The absorbtion of gamma and beta rays are employed in industry in a large number of thickness gauges. Sheets of metal, paper or plastic pass over a radio-isotope and a gauge on the opposite side gives a direct reading of their thicknesses. Gauges of this type are now used in all the automatic mills handling continuous hot steel strip. The thickness of coatings such as tin on steel, rubber on rollers and lacquers on metals are measured by the back scattering of beta rays, reflected by collision with nuclei.

The development of more nuclear power plants will give us vast quantities of byproduct radio-isotopes, quite apart from the radio-isotopes deliberately made for research. It is estimated that by 1970 this country alone will be producing 1 ton a year of fission products from its nuclear power plants. These will give 140,000 kilowatts of power; not much in terms of modern power plants but a useful total for the specialised uses or radio-isotopes.

If it is found that the beta and gamma irradiation of food does not create cancer-forming compounds, it is certain that the vast majority of this will be built into radio-active "compounds," each containing at least a million curies, that will be used in the food industry to replace heat sterilizing equipment.

It is to be hoped that radio-isotopes will continue to be used for such peaceful purposes, for 1 ton of fission products properly distributed in the rivers of this country would soon kill every living creature.

John Newman

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Following immediately after the conclusion of his highly successful serial "Star Ship" which ended last month, any short story of author Tubb's would of necessity be something of an anti-climax. Nevertheless, the one published here is still up to his usual high standard.

PERAC

By E. C. Tubb

Doctor John Trevor, fifty years old, a social misfit and a professional failure, stared at his own image and didn't like what he saw. Age had touched him lightly, greying his hair with light fingers, seaming his cheeks just sufficient to accentuate his character, turning him from a callow youth into a mature adult with governed responses, controlled emotions, and an encysted sympathy for the human race.

But he was still fifty years old.

He turned from the mirror at a knock on the door. It opened to reveal the steward, a passenger list in his hand and a grin on his face. He entered the sick bay and handed Trevor the list.

"Ten passengers this trip, all Earth bound, and all impatient to get home." He sat on the edge of the desk with the easy familiarity of an old friend. "I've been hearing rumours, John. Is it true that you're going to quit after we land?"

"Thirty years in space is enough for anyone." John scanned the list and dropped it back onto the desk. "It's time I settled down."

"With the schoolteacher?" The steward grinned at Trevor's expression. "You can't keep a thing like that quiet, John. Everyone was hoping that you'd have a ship-marriage. Are you?"

"No." John didn't bother to explain that he wanted to be accepted by her people before tying the knot. The steward shrugged.

"A pity. It's against regulations, of course, for members of the crew to marry passengers, but Delmar would have stretched a point as you're quitting at the end of the trip. Still, you know your own

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business." He rose and held out his hand. "Congratulations! She's a nice girl."

"Thank you." John hesitated, looking at the steward. "Look, Sam, you've known me a long time. Do you think it's a mistake?"

"Getting married?" Sam shrugged. "Marriage is always a gamble John. I've been married three times and each time it didn't work out. That was my fault. No woman expects to be a grass widow for months or years at a time, not if she's normal she doesn't, and I wouldn't give up space and settle down." He sighed. "Sometimes I think I made a big mistake."

"In getting married?"

"In not settling down." He grinned at the doctor. "But you're quitting, aren't you?"

"Yes."

"Made any plans?"

"Not yet." John shrugged. "I'll set up in practice somewhere. Mary's people live in the country and there should be room for one more doctor." Automatically he glanced towards the mirror. "It isn't that I'm worried about."

"No?"

"No." John hesitated. "I'm not much of a catch for any girl, Sam. No spacer is. We've lived too much alone and away from things. Mary's young and deserves a full life and, now that she's finished her contract on Mirab IV, has everything to look forward to. I wouldn't like to think that she's making a mistake."

"Isn't she the best judge of that?" Sam shook his head as he stared at the doctor. "I know what's the matter, John. You think that you're too old for her, but you're not. Twenty years isn't much and you shouldn't let it worry you. You need a wife, John, every man does. Take what's offered and don't spoil it by doubting yourself." The steward chuckled as he slapped the doctor on the shoulder. "I know what's wrong! You've got pre-marriage blues. The first time I got married I had to force myself to the registrar. He thought I was drunk and didn't want to register the marriage until the next day." He smiled at the memory. "You should have heard my wife!"

"I won't get drunk." John picked up the list and clipped it against a bulkhead. "See you later, Sam."

Alone, he stared again into the mirror. Despite what the steward had said the doubt was still there. The very thing which had caused him to run from the commercialism of Earth into the relative security of space made him unsure of himself so that he questioned the most intangible human emotion of all. He knew that he loved her but he

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didn't know why she loved him. It still seemed too good to be true.

He looked up from where he sat at his desk as the door opened and a woman entered the sick bay.

She was young and pretty, her hair well-groomed, her figure neat beneath her immaculate clothing, her manner precise and self-controlled. A schoolteacher returning home at the expiry of her ten-year contract and already looking forward to the family reunion, the social life, marriage, motherhood, the easy old age and easier passing of those fortunate enough to die on the planet of their birth.

The girl John was going to marry.

He rose as she entered and swept her into his arms, careless of anyone who might be passing the still-open door. He held her to him as though sheer physical force could make her forever his and, when he released her, she was gasping for breath.

"John ! Really !"

"I love you, Mary." He slid shut the panel and kissed her again. "I love you more than anything in the universe. I never knew that it was possible to love so deeply."

She smiled at that, young enough and inexperienced enough to be flattered by the adoration of, to her, sophisticated and experienced man-of-the-world.

"This is a professional visit," she said primly. "You know that we agreed not to see each other until after the trip." She smiled up at him. "Surely you can wait until we land ?"

"Three weeks ?" He looked miserable. "And suppose that you decide against marrying me during that time ?"

"Don't be silly !" She became serious. "You know that I love you, John. Please don't ever doubt that."

"I won't." He gripped her hands then released them as she winced with pain. "Mary ! What's the matter ?"

"It's my hands, John. They hurt." She held them before her, soft, white, the filed nails a delicate shell-pink, the half-moons a pale rose, the cuticles clean and untorn. The hands of a woman who was proud of their appearance.

John stared at them and, with a subtle alteration of attitude, turned from the lover into the doctor. He gestured towards a chair. "Sit down, Mary. Hurt, you say ?"

"Yes."

"Itchy ? Burning ? Sore ? How would you describe the pain ?"

"I don't really know." A suspicion of a frown creased the smooth skin between her eyes. "They began to ache about three days ago. I bathed them in hot water, massaged them, and the ache went away.

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Now they hurt worse than before." She smiled again. "I suppose all this must sound awfully silly to you?"

"Not at all. You would call the pain an ache then?"

"Well, not really. It's more of an itching deep inside, if you know what I mean."

"I think that I do." Trevor reached for a small cushion and adjusted a brilliant desk-light. "We'll have a look at them, shall we? Rest them on the pad, fingers spread, muscles relaxed. Relaxed please. That's better." Unnoticed by the girl he dipped his hands into a glove-spray, dried them in a hot-air blast, and flexed the thin, almost invisible plastic film sealing his hands. Delicately he touched those of the girl, feeling the knuckles, the bones, the web between the fingers and the region around the nails. She winced.

"Did I hurt you?"

"A little."

"I see." He smiled as he reached for a viewplate and probe. "Just keep relaxed, this won't take long."

Magnified by the viewplate the hands rested on the pad like twin sculptures by some ancient master, the fingers slightly curved, the skin bearing just that trace of roughness impossible to eradicate, the slightly over-developed muscles of the right index finger and thumb betraying her profession. Carefully he slipped the probe beneath the cuticles, bearing down until the hands jerked with uncontrollable reflex action, the hiss of her indrawn breath telling him just what he wanted to know.

"John!"

"I'm sorry, dear." Setting down the probe he selected a tiny hypodermic and deftly drew a sample of blood from the vein at the base of her thumb.

"Is it anything serious, John?"

"Of course not!" He was annoyed to find that he was sweating. "I'll run a blood test and take an X-ray, but don't let what I do worry you." He forced himself to smile at her anxious expression. "That's one of the penalties of reporting sick on a ship where the doctor has nothing to do. You're lucky that I'm not giving you a complete physical just for the sake of the exercise."

She smiled as he adjusted the camera and took the X-ray. She remained smiling as he coated her hands with the glove-spray, running the thin film well up her arms and making certain that every inch of skin was sealed from the air. She was still smiling as she left the sick bay to return to her cabin and the rosy dreams of the future.

Trevor stopped pretending when she left the room.

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He developed the film and tested the blood. He made a slide from the matter at the tip of the probe then destroyed both probe and hypodermic. He incinerated the cushion and sterilised the slides. He dipped both arms into a solution which removed the glove-film, drained the container, washed it with weak acid, then scrubbed his hands and arms until they were sore. He worked like an automaton, trying not to think of the young woman he loved, but one thing he couldn't forget.

Mary had perac.

A Latin had died from it first and thereby achieved the only immortality known to Man. He had died on the way to Mars, two hundred years ago, long before the negative drive had opened the way to the stars, but the thing from which he died still existed and there was still only one known remedy.

Death.

Nothing medical science had been able to discover could halt the progressive breakdown of nervous tissue. Amputation had been tried and proven useless. The alternatives were simple. The victim could either die gracefully, intelligently of his own free will, or he could die in shrieking agony as his body rotted from the extremities. Either way he died.

And Mary had perac.

"Does she know?" Delmar, old in the ways of space, looked at the doctor. "Have you told her?"

"Not yet. I made the tests and sealed her hands but she doesn't know. How could she? Disease, to her, is a thing impossibly remote."

"I see." The Captain glanced down at his hands. "You know the regulations, Doctor."

"Isolation; destruction of all material with which the affected person may have been in contact; disposal of affected person; quarantine of vessel until all danger of contagation has passed." Trevor looked at the captain, "You can't mean . . ."

"I'm sorry, doctor, but I have no choice." Delmar flipped a switch and spoke into the intercom on his desk. "I'll arrange for a guard. Under the unusual circumstances I will relieve you of your duties." He stared sympathetically at the doctor. "If you will give me the drug?"

"No!" Trevor paused, shaken by the violence of his protest. "You can't mean it! Not her! Not Mary!"

"We have no choice, John." Delmar lost his official coldness as he stared at the doctor. "Believe me, I'm sorry. I know what this must mean to you but what else can I do? It can be done so painlessly,

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a drug in her food, a something in the water." He shrugged. "Let's face it, John. You know the alternative."

"We haven't even tried to find an alternative. Those regulations were written back in the old days when women didn't venture into space at all. No one cared what happened to a man, not when they thought they might catch it too, but we know better now. Perac isn't contagious."

"We don't know that and we daren't take any chances." Delmar sighed. "Look, John, let's not argue about it. You know as well as I do that there is only one thing to be done."

"No!" Trevor forced himself to be rational. "Look. Why not just keep her in isolation? I can numb her with drugs so that she need feel no pain. Maybe, by the time we reach Earth, they will have discovered a cure." He was talking like a fool and he knew it but something, it may have been the realisation of his loss, forced him to continue. "No one need know. The rest are clean and there's no reason why they shouldn't stay that way." He stepped close to the edge of the desk. "Damn it, Delmar! You can't kill her! You can't!"

"Please!" The captain shifted uncomfortably on his chair. "I didn't frame the regulations but I must see that they are carried out. There are others to consider and, if you haven't thought of it, there is the girl herself. Perac is fast, John. She would be dead before we made landing. Do you want her to suffer?"

"Of course not."

"Then you know what has to be done. I'm sorry, John, but it's the only thing to be done. You know that."

"Yes," said Trevor dully. "I know that."

"Then tell me what to do and leave it to me."

"No," said Trevor thickly. "I'll do it. I want to see her again before . . ." He shuddered. "It's a hell of a thing to happen to anyone. Maybe I can comfort her."

Delmar didn't answer.

It was a problem of ethics.

Perac was death and she had perac. Two and two make four. Action and reaction are equal and opposite. Death now or death later, what did it matter? Except that death now could and would be painless while later . . .

Trevor didn't like to think about it.

Alone in his office Trevor almost regretted his decision and yet he knew that it was his duty. He had already been exposed to what contagation there was and Delmar had not. He knew what the Captain would have done, a drug in the food or water, and a cold-blooded

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disposal of the body. He couldn't help the latter part but the thought of killing Mary as if she were a diseased animal made him feel ill. He couldn't let that happen.

He had been drinking but he wasn't drunk, the alcohol had been burned away with his nervous tension while he waited and tried to find excuses for putting off the inevitable. Now he picked up the bottle, smiling a little at the familiar scene on the label. Comfort for the dying? If a picture, the distilled grain of rolling fields, the trapped sunlight of Earth could do it, then he had the answer. Part of it anyway.

Two glasses stood on the table and he polished them until they shone. From a cabinet he took a phial, shook out the tablets it contained, and slipped them loose into a pocket. From a shelf he took a small, flat medical kit and, tucking the bottle beneath one arm and thrusting the glasses into a pocket, he left the room.

The guard passed him, staring curiously at his white features, and slid aside the door. Softly Trevor entered the cabin, set down his burdens, and smiled at the tear-stained face of the girl.

"John!"

"Mary!" He held her close to him, feeling the tremor of her body. "How do you feel?"

"Terrible!" She clung to him with a pathetic trust in his power to help her. "My hands hurt and when I tried to go to you a man outside stopped me and sent me back. He . . ."

"Let's forget about him." He didn't want to remember that, if he hadn't delayed, the incident would never have happened. "Are you in much pain?"

"Yes." She held her hands towards him, her eyes widening as she saw the velvet blackness spreading over the tips of her fingers. "John! Look at them! They're dirty!"

"It isn't dirt, my dear." Gently he examined them, turning them in his own, gloved hands, then reached for the medical kit. "We'll soon stop the pain."

Carefully he loaded a hypodermic, ignoring the subconscious voice whispering . . . 'now' . . . 'now' . . . and fed the narcotic into her vein. It acted almost immediately and, as the pain vanished, she smiled with childish gratitude.

"Thank you, John." She stared at her hands. "What is the matter with them?"

"Nothing." He tried to be cheerful. "Don't worry about it."

"You're lying, John," she said quietly. "I can tell when you are upset and something's worrying you now." She stared into his eyes. "Don't ever lie to me, John. I could stand anything but that. I

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don't think that I could love you if ever I knew that you lied." She paused. "What is it, John?"

"Perac." He said it before he could stop the word cursing himself for the admission, still half-hypnotised by her insistence on the truth. He couldn't lie to her, couldn't, and yet to lie would have been the kindest thing he could have done.

But it was too late.

She knew, of course. Everyone had heard of perac and everyone knew what it meant—or almost what it meant. She recoiled from him, her face white, her lips trembling as she stared at her hands.

"Perac!" The way she said it made the word sound obscene. "But how, John? How?"

"No one knows, dear," he said miserably. "Perac is something which only happens in space. As far as we know it's something which is triggered off by the outer space radiations and that's all we do know. No one is immune but, as far as we can tell, if it doesn't appear within a certain time of exposure it won't appear at all. The only good thing about it is that it's rare. About one fifth of one per cent. It doesn't appear to be highly contagious, not more so than leprousy, but we can't be certain even of that. I . . ."

She wasn't listening.

"It's a disease," she said flatly. "I'm diseased, I can't marry you, John. Not like this, not as we planned. Not ever."

"No."

"It's funny." She tried to laugh and failed. "I'd looked forward so much to returning home. Back after ten years away with a husband and everything. I haven't really lived yet. Ten years on Mirab IV teaching school and protected as though I were precious. I'd looked forward so much to enjoying all the things I'd missed." Abruptly she turned to him and her arms were hard around his neck. "Oh, John! I shall miss you so!"

She didn't know! She didn't guess why he was here and what he had to do. To her perac was an unpleasant disease meaning isolation, years of treatment, pain and suffering but eventual cure. She was being brave. She was, in her way, giving him his freedom.

He looked down at her as she pressed herself against him. She was the wife he had never had, the daughter he would never know, the lover he had done without, the sweetheart he had always denied. She was youth and beauty and all the bright happiness which might have been. She was warm and comforting and tender and, as his arms closed around her, his mouth twisted with bitterness as he stared down the barren, wasted years.

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He had found his love—too late !

And he was fifty years old.

She stirred in his arms and her face, as she stared at him, was streaked with tears. " What will they say at home ?" she whispered. " They will be waiting for me and when they see me, discover what has happened . . ."

" No." He didn't explain and he prayed that she wouldn't guess the truth. Almost he had said too much. Luck had been with him, luck and her ignorance, but she was dangerously near the truth. He had to kill her before she guessed but, looking at her, he knew that he couldn't do it. He had had his chance and, if he'd have taken it, it would have been all over now. But he had wanted the last few minutes with her and now it was too late. He couldn't murder her but . . .

" Let's have a drink," he said casually. His hand swept from his pocket, hovered over one of the glasses, then reached for the bottle.

" I don't drink, John. You know that."

" Just this once," he urged. " To please me." He tilted the bottle and poured the glass full of golden fluid. " A little won't harm you. It came from Earth and, in moderation, will do you good. Please."

She hesitated, looking from the glass to him, and in her eyes he read a dawning suspicion. Memories, perhaps. Whispered tales over the tea-table or third-hand hearsay. She bit her lips.

" John. What happens to people with perac ?"

" Nothing."

" Don't lie to me ! They die, don't they !" She leaned towards him. " John ! How do they die ?"

" How does anyone die ?" He held the glass towards her. " Please, Mary. Drink this down."

" You poison them. They die on board and you throw them into space. John !" Horror showed in her eyes. " Is that poison ?"

" Poison ?" He smiled. " Some have called it that but not in the sense you mean. Really, Mary ! I'm surprised at you ! Don't you trust me at all ?"

Deliberately he raised the glass to his lips, swallowed half the contents, and put it into her hand.

" Please drink it."

She hesitated, then, trusting in his love of life, drank it down. For a moment their eyes met above the rim of the glass and he smiled.

He felt no regret, no fear, no terror of what was to come. He knew the drug and what it would do and, as he sat and smiled at her, warm with the knowledge of a job well done, he felt a sudden peace.

For what better way to comfort the dying ?

Than by dying with them.

E. C. Tubb

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Poul Anderson is one of the few successful post-war writers in America who has made a name for himself in the science fiction field, Ranking with Robert Sheckley, Richard Matheson, Chad Oliver and others for their very fine concepts of possible alien life. "Butch" is just such a story and enhances the author's already high prestige.

BUTCH

By Poul Anderson

Illustrated by WOODWARD

Like everybody else, I read about the Nova Scotia Meteor with some interest, though I'll admit my first thought was what a pity that it had plunged unrecoverably into the Atlantic. Anything big enough to produce that much fire and noise would have been of real scientific value. It was Valerie who pointed out to me the farms and towns and people on which it had not fallen. Then we forgot about it.

A few days later, the papers were full of stories about the Bangor Monster. You remember the terror for a week in eastern Maine: two men and a boy found dead in lonely places, and any number of dogs and cows, apparently slashed by knife-like claws; unidentifiable pad marks around the bodies, which could only have been made by something walking on two feet; stories of the thing glimpsed, stories of the thing chasing people, ten thousand conflicting stories and descriptions over the whole east coast; state police everywhere, reporters everywhere, the Thing (capitalized by now) everywhere simultaneously. As usual, whatever facts there might be were soon buried under the hysteria and the publicity-seeking lies. Then the sudden blackout of news, the story buried in back pages, psychologists talking pompous nonsense about mass hallucination, and oblivion. Pretty soon we forgot about that too.

It was a couple of months later when I came home, one of those raw, sleety evenings you get in the Chicago winter, and found that we

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had a visitor. I opened the door of our apartment, thinking mostly about supper, a hot Scotch and lemon, pipe and slippers and our newly acquired Beethoven Ninth. Valerie met me, and I greeted her in detail. Even after two years of marriage, you don't get tired of a vivacious, imaginative little blonde whose figure is best described by making sine waves with the hands. She can also cook.

"Bob—" she said. "Bob, my new hairdo—hey, there!—oh, well . . . mmmm . . ." Pulling free: "Take it easy, caveman. We've got company."

"Oh?" I went past her into the living room. Doc Urquhart was sitting under the View of Toledo, a short, round, shockheaded figure I hadn't seen for four years now. "Well, I'll be damned!"

"Quite probably," said Valerie.

Doc got up and pumped my hand. We'd become acquainted during the war, when he was the medical man finding out what a human pilot can stand and I was the engineer explaining to him why the pilot would have to stand a little bit more than that, and had kept up the friendship since. "Nice to see you," I said, and meant it. "But why the deuce didn't you let us know you were coming? We'd've arranged—"

I realized suddenly how grave his face was, and broke off. For a moment there was silence.

"It's business, Bob," he said at last. "I want to offer you a job."

"Thanks, but I've got one," I answered.

"Can you get leave from it?"

"Why—well—what do you want me for?"

Doc shook his tangled grey head. "Can't tell you that. Not here. But you've never worked on anything more important."

"I assure you, Dr. Urquhart, there are no Russians under the sofa taking notice," said Valerie.

"Sorry, Mrs. Muir. This, well, I just can't talk about it. In fact, I'll have to ask you not to mention that I've been here or that Bob has been co-opted."

"If I've been," I said, annoyed.

"Look, Bob," said Doc, "You know me better than that. Here's the deal. We need a man like you, and I recommended you personally. Luckily, you're working with classified data at the moment, so your FBI clearance is already good. But your wife hasn't been cleared. We want you as a—a consultant. Top pay, and the work is, well, it's the sort of thing you'd pay to get in on. Shouldn't take too long, about six weeks maybe. I came out to interview you personally and see if you qualify. Talking with your wife has convinced me that you do."

"I'll have to think about it," I said lamely.

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Doc switched the conversation, and we had a pleasant evening, the sort of bull session that had lasted till dawn in my bachelor days. In the end, of course, I agreed to his offer. Two days later, we were in a taxi bound for the airport and a special plane.

"Now can you tell me what the job is?" I asked.

"Not till we're in the air," he replied. "But I'll tell you why you qualify for it."

"Go ahead."

"I noticed that you still read science-fiction."

As it turned out, the plane was an Air Force speedster with a taciturn young crew. That didn't make me feel important, somehow; instead,

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I had the sudden idea I was a very small fly caught in a very large machine. "Where are we bound?" I asked humbly.

"The Danton Institute. It's a mental hospital in upstate New York." Doc got his pipe going and blew moody blue clouds.

"And what are we going to do there?"

"We're part of a sanity commission."

"Huh?"

"We have to decide on the sanity of a being from outer space."

The Danton Institute had been picked largely because of its isolation. It lay in the rolling hills above the Hudson Valley, with a couple of hundred acres of lawn and park around it; once it had been a millionaire's estate. The nearest town was a village ten miles off, otherwise there were only scattered farms. A high stone wall surrounded the main house, which had been the mansion and about which smaller outbuildings had mushroomed. On the whole, it must have been pleasant enough, with an exclusive and expensive clientele. These had all been moved elsewhere, and now the Institute looked more like an armed camp. Sentries stood at the approaches, sentries patrolled the walls, jeeps and half-tracks and a few light tanks squatted with bored-looking drivers always waiting nearby, helicopters were parked in the rear, soldiers had turned the dormitories into barracks, soldiers and important-looking civilians moved in and out of the big house—"Judas priest!" I said. "All for one alien?"

"If you remember your science-fiction," said Doc, "this alien may at any instant start pulling men apart by telekinesis. Or he may decide he doesn't like us and take it on the lam for Russia—with all his knowledge. Or he may call up the Kremlin by telepathy and get a paratroop brigade sent to haul him out of here."

"I wonder if he's the crazy one," I muttered. The fourth consecutive MP was checking our passes.

Doc shrugged. "I suppose you'd welcome him with a brass band and the keys of the city—after he murdered three unarmed citizens up in Maine, including one ten-year-old child, and tore the throat out of a psychiatrist here who was only trying to get an encephalogram."

"Mmmm—yeah," I said. "There is that."

We were shepherded by a tense-looking young lieutenant of Intelligence, through high, oak-panelled hallways to the room which was the main office of Project Wizard. That name, together with other misleading hints, had been chosen with malice aforethought: in case there was some leak, it was hoped "they" would assume we'd taken over the institute merely to study something in the ESP line which might have military value. I overheard snatches of conversation between

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men. It had nothing to do with the stars or a science a thousand years ahead of our own or the fate of our race; it was mostly plain human bellyaching at being penned in here indefinitely without so much as a female face around. Nobody but the top brass was going to leave the Institute till something had been accomplished with Butch.

Brigadier General Harmon J. Leslie was about forty years old, a bulky, harassed-looking man with stiff grey-shot hair and horn-rimmed glasses. He was actually just an administrator; the real boss of Project Wizard was Dr. Hamilton Moran. Both of them greeted us as we entered, said they were pleased to meet me, and asked us to sit down.

"I haven't been told many details," I said. "I'm not even sure just what I can do to help."

"The whole business is unprecedented," said Moran. "We've had to make up our own rules as we went along, Dr. Urquhart said you had the kind of mind which could come up with new approaches, fresh slants—that's enough for us. If nothing else, you may be able to guess just how far advanced the technology of Butch's people is."

He was a slim, dark, sharp-featured man, whose gentle voice didn't quite fit with the almost Puritanical features. Doc said he'd been picked to run the project because of his prominence as a research psychiatrist. He'd had a lot to do with developing shock techniques and lobotomy, as well as fundamental work in encephalography and neurology. Actually, there were not too many men working on the problem itself. A large number would only have got in each other's way. Moran and his assistants were handling the psychiatric end, while Doc Urquhart's staff was still considering Butch's anatomy and biochemistry. I was a kind of last resort; maybe Butch was his people's equivalent of an engineer, and I would think enough like him to understand what was going on in that unhuman skull.

"Suppose you begin from the beginning," I suggested. "I gather that the Nova Scotia Meteor was really a spaceship which crashed in the sea. It hasn't been recovered, has it?"

"With some thousands of square miles in which it might have struck, and some hundreds or thousands of feet of water on top of it—hardly." The general's voice was dry. "We're still trying, but it's hopeless. Apparently it went out of control, and Butch was the only survivor. He bailed out—"

"How?"

"How should I know? He was found in Maine, three or four hundred miles away, practically naked. Maybe he's, what's the word, telekinetic."

"Then he wouldn't stay here," said Moran crisply. "He wouldn't have been captured at all. No, I imagine he had a—oh, call it an anti-

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gravity parachute—which carried him about to Bangor. Then it probably ran out of fuel, and he buried it and set off on foot. He wandered around for a week or so, presumably hiding by day and travelling by night."

"Sounds like he was scared of us," I suggested.

"Well," said Doc, "wouldn't you be if you landed on an alien planet? He'd have no idea what we were like. Maybe, on the basis of other planets he's seen, the chances were that we'd be hostile. He buried his parachute so as not to give us any information we don't have, and began skulking about trying to learn what sort of world he was marooned on."

"That's a nice hypothesis," snapped Moran, "but it just doesn't fit the facts. Which are that he killed people and animals without provocation."

"The cows he must have killed for food," said Doc. "They had been partially eaten. The dogs probably barked at him, and he didn't dare have that noise."

"But the people? He must have known they were the dominant species here and that his killing them could only antagonize us."

"I can't explain that," admitted Doc in a small voice.

"Nor has he been the least bit co-operative since we caught him," said Moran. His soft tones had suddenly turned cold. "He should have been able to see where his only advantage lies. But he's done nothing that makes sense. Most of the time he's quite passive, refusing to communicate in any way. Occasionally, for no reason at all, he flies into murderous rages. We've had one man killed and several badly injured."

"So what's your theory?" I asked, though I knew the answer.

"He's insane, of course. Probably he sustained some injury in the crash and it's driven him out of his mind."

Leslie smiled with a certain bleakness. "You see the problem," he said. "Butch represents a civilization so far beyond ours that we probably can't imagine half of what they've got. Atomic energy, gravity control, probably faster-than-light travel—just write your own list. We've got to have his knowledge, both for the sake of this nation and for the whole damn human race. His civilization could probably squash us like beetles if they wanted to. But will they want to? We've got to know!"

He spread his hands. "Only Butch is insane. First we've got to cure him. How do you cure a non-human member of a civilization that never was on Earth?"

Doc Urquhart cocked a sardonic brow at Moran. "I think there's a more fundamental question," he replied. "How do you know when he is cured? What, for Butch, constitutes sanity?"

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The padded cell was upstairs, at the end of a corridor whose doors opened on labs crammed with more testing equipment than I could put a name to. A pair of sentries stood at the landing, and another pair, flanking the outer door of the cell, snapped to attention as we four approached.

The room beyond was a large one. It had been cut in half by a hastily erected but husky wall. The farther end was the cell. Moran gestured at a peephole, and I put my eye to it. There was a wide-angle lens which covered nearly the whole space, but I looked only at Butch.

He was standing in the middle of the room, arms hanging, the long cat-like tail drooping, but his posture was defiant. My first impression was that he was gigantic. Then I recognized the illusion common to six-footers, that anyone their own height is taller. According to the measurements, Butch was six one and a half and weighed some two hundred pounds. His torso looked almost human, broad-shouldered and smoothly muscled; his legs were not quite so manlike, he was digitigrade and walked with a crouched gait on three clawed toes. There were horny spurs on his heels, and when the four stubby fingers on his hand closed together, retractible claws came out between them. Sleek bluish-grey fur covered the whole form; otherwise he wore only a kind of sporran of some soft, metallic-looking, seemingly indestructible fabric. The pouch had been empty when he was captured.

His head was the most unearthly thing about him. It was of good size, round, with a high bulging forehead and large pointed ears. The eyes were oblique and yellow, with narrow horizontal pupils. The mouth was wide, full-lipped, with two small tusks projecting over the chin. Instead of a nose, he had two fleshy organs that looked rather like branched coral growths, though they were soft and movable.

He sensed us and turned around. For a moment he hissed, and the claws came out. Then he went back to his aloofness.

I looked up from the peephole, shivering. It must have taken real guts for the state police to track down that monster and catch him in nets instead of filling him with lead. After that, of course, the FBI and the Secret Service had taken over. Those outfits work fast when they want to.

"He takes a little getting used to," said Doc quietly. "But he's really beautiful, in his own way. We must look just as weird to him."

"Or it," muttered Leslie.

"It?" I asked, bristling a trifle. "Look, just because he's from outside—"

"Oh, I didn't mean to sound—prejudiced," said the general. "Face it, Butch is 'he' only by courtesy. He's really, a, uh, hermaphrodite."

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"No kidding!" I took another look.

Doc nodded. "We're not too well up on his anatomy yet," he said. "But he's submitted to a number of examinations. He's a warm-blooded, hairy animal with both male and female reproductive organs—though neither looks much like ours. He could reproduce by himself or in partnership. But he's oviparous, I'm convinced, and there are no organs of lactation." He smiled wryly. "Neither mammal, reptile, nor good red herring. You name it."

"How about those—antennae?"

"Spongy growths, used for both breathing and smelling as far as we can gather," said Moran. Doc frowned a bit; after all, those results were due to his team. "Tests with minute traces of perfumes and so on indicate that his sense of smell is far superior to ours. While we can't be certain, we've reason to think that his other senses are about as good as the human, maybe his hearing is not quite equal to our norm. He probably smells us at the peephole."

I looked in again. There were washing and sanitary facilities in the cell, also padded and rubber-covered. Doc told me that Butch used them without having needed instruction.

"How about food?" I asked.

"Now there's a real problem," said Doc. "His metabolism is obviously pretty similar to ours. Blood and cell samples, analysis of body wastes, and so on, indicate that, though there are some interesting anomalies. No adrenalin, for instance—another phenol derivative instead; and the chromosome pattern— Well, anyway, we've just given him a wide variety of stuff and let him choose what he wants. Which turns out to be mostly meat, though he won't touch it if it's bloody. Some fruits and vegetables, too. So far his health has remained tolerably good, as far as I can judge. Only—what vitamins and trace elements that he needs are lacking in that diet? It'd be strange if he could eat nothing but ordinary Earth food for a long time without developing some kind of deficiency. We've added a supplement containing almost everything we could think of, in minute doses, so if he needs tantalum or calcium pentothenate he's getting it. But—" Doc shrugged. "No telling."

"He can't be from this solar system," I said, very quietly. "There are no planets here he could have come from."

"Yeah," said Leslie. "Interstellar spaceships. I know. And if the galactic overlords don't like the way we've treated Butch—"

"They may never find us again," I said. "Space is too huge. This may be only one of a million explorers, of whom a certain percentage never come back and are just written off."

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"There are ten thousand possibilities," said Moran impatiently, "and we'll never know which is right until Butch tells us. But he won't communicate."

The institute was pretty crowded, but Doc and I had a fair-sized room to ourselves. That evening we broke open a case of beer and settled down to some serious talking.

"You're an idea man," said Doc. There was a new harshness on his round ruddy face. "We've tried just about every standard, professional approach there is. At my insistence, we've now co-opted you for the amateur approach. Deliver, boy."

"Well," I said, tilting my chair back against the wall, "just what have you tried? Let's see. Let's make a list." I ticked the points off on my fingers. "From the physiological angle, you've studied

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samples of blood, skin, hair, and so on. You've taken Butch's temperature, which turns out to be around one hundred two—"

"Not necessarily his racial norm," said Doc. "A lot of humans have chronic hyper— or hypothermia. Moran thinks the temperature is a sign of hysteria."

"Well, you've tried to test his senses by seeing how he reacts," I went on. "Not too successfully, because most of the time he just refuses to react. You've let him decide his own diet, but don't know if you're slowly poisoning him or not. You've taken cardiograms, X-rays, encephalograms—"

"Ah, yes, those encephalograms," said Doc. "They're not human patterns, you know. But Moran thinks they indicate mental abnormality. He says one of those frequencies is found in humans with a bruised cortex, and Butch is nearly enough human—"

"How can you find out? That wave may be perfectly all right for his race."

"How do you think Moran means to find out? Open the skull and see."

"But—good Lord! Butch's brain probably doesn't even look like ours!"

"I know. Such hints as the X-rays give us suggest that. Still—what else is there to do? Moran may be right. Me, I'm wondering what anaesthetic to use."

"Well, let's go on to the technological angle," I said. "Pretty nil, you told me. When you showed him stellar maps, he didn't do a thing. When you took him outside and showed him the stars and asked him in sign language to point out where he came from—he didn't."

"Moran says he's nuts, and that's part of the evidence," nodded Doc.

"I think Butch is just being cagey," I said. "How does he know we don't have spaceships and designs on his home star if we can find it?"

"Well, such suspicions do look pretty paranoid, don't they?" asked Doc. "I've always thought the whole idea of galactic conquest was ridiculous. Logistics and economics both speak against it."

"Could be," I said reluctantly.

"At any rate," said Doc, "we tried to draw diagrams for him, simple things like a Coolidge tube or the fission of a U-235 atom. Dammit, Bob, he couldn't have been crewman on a spaceship without knowing a lot of applied science! We wanted him to draw similar pictures. It needn't have been anything he wanted to hide, it could only have been—oh, a picture of thorium fission. A schematic radio

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circuit. Anything, just to give us some common basis of symbols. But he kind of stared at the pictures, and then handed the pencil back."

"So that's proof he suffers from amnesia?" I asked.

"Well, it's indicative," said Doc mildly.

"Yeah. Unless—could it be that his science and its symbols are really different from ours? Maybe they don't use radios, they might have something we've never dreamed of. Maybe they don't think of the atom as a particle made up of other particles. It could be regarded just as a singularity in a universal potential field, if Butch's race is good enough at mathematics . . . In other words, our whole symbology may be so alien to his that he saw it was hopeless to try drawing us any pictures."

"It's possible," said Doc. "I'd like to believe it, Bob. But his whole behaviour pattern is so irrational that—Well, look. He has almost the same vocal equipment as we do. Vocal chords, hard and soft palate, tongue—all of it. He'd speak English with a funny whistling accent, but he could talk. His race must communicate by speech, they wouldn't have such organs so well-developed if they didn't."

"And he won't talk," I said.

"Not a damn word," said Doc. "We've tried by the hour, pointing out objects, naming them, acting out verbs, drawing pictures, every goddam thing you can imagine. We've had educational psychologists from here to California working on the problem. Butch watches us. But he never says a word. When he gets mad, he may hiss, but never a word."

"Look," I said, "there's no such thing as human nature. It's a matter of cultural patterns. There's no biological difference between us and the late lamented Nazis, but you could cross the universe, I'm sure, without finding thought and behaviour patterns more incompatible. So—what kind of society does Butch come from?"

"We've had anthropologists here," said Doc. "All they could do was make profound and meaningless remarks. Hell, Butch doesn't give us anything to go on! If he is a normal member of his culture, then that culture must be something horrible. Look at his record—" The old voice shook just a little. "Murder, complete unco-operativeness, passivity breaking into violence for no reason at all—"

"Maybe we break one of his taboos every now and then, without knowing it," I suggested.

"If Butch could cross space, he'd have sense enough not to expect us to behave just the way he thinks proper," said Doc. "Unless Moran's right."

"My wife has a degree in anthropology," I said, "and she's a smart girl too. Can't you get her here?"

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" I'll try if you insist," said Doc, " but there isn't much chance of it. Anyway, by the time she got her clearance, this business would be over—one way or the other."

I sat forward so my chair's legs crashed on the floor. " How's that?"

Doc smiled grimly. " You don't think this deadlock can go on forever, do you ? Butch has knowledge we've got to have. Moran already has an okay to—cure him. Sooner or later, and probably sooner, he'll start trying."

" And if Moran fails ?"

" Then," said Doc, " we forget that this ever happened. We bury it deeper than that spaceship is buried. We lock Project Wizard up and throw away the key. Until the possible day when Butch's friends come looking for him."

I wanted to watch some of the studies, and that was granted me the next morning. After breakfast, Doc was going to make some allergy and reaction tests. " Dr. Moran's orders," he explained. " You have to know a good deal about biochemistry before you can try shock treatment."

" Why shock ?" I asked through a mouthful of ham and eggs. They fed us well, at least. The dining room was full of uniforms and the good clean smell of coffee. " If concussion is responsible—"

" We'll have a look at his brain first," said Moran, " but I wonder if shock may not be our only hope. If it fails, there's always lobotomy."

" What the hell do you think you're treating him for ?" I snapped. I'm always irritable in the morning.

" I wish I knew," said Moran frankly. " It isn't a human behaviour pattern—not even an abnormal one. The passivity alternating with sudden rages suggests manic-depression; but then again, it could be paranoia, ordinarily showing as aloofness but becoming murderous at some fancied threat or insult. But there's the amnesia too, those scientific data that he simply didn't recognize." His gaunt keen face took on a stubborn look. " All in all, though, it looks as if the insanity is due more to psychic factors than to gross lesions. Possibly the terror of the crash landing . . . If that's correct, then shock treatment is indicated."

I bit back my reply, but it was harsh inside me: Yeah, that's right. Charge on into something you don't know, destroy brain cells right and left, and probably you'll end up destroying the whole life of that being from the stars. After which you can forget he ever came to us.

Communication with Butch was so much more than just the data he could give. That alone might be enough to jump man a thousand

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years ahead, to enforce peace and nourish the world and wipe out the disease and poverty and misery which have haunted us through all our days. Butch was more, even, than the knowledge we had to have about his own civilization: where were they, who were they, what were they, what did they intend for us? Before all else, to me, Butch was the stars.

My sons could ride across the universe.

But Butch was crazy.

Or was he?

As we went up the stairs—Doc, Moran, myself, and a couple of Army medical technicians—I tried again to make another pattern out of the facts. Items: murder, intransigence, bursts of rage, blank silence, apparent failure to recognize scientific diagrams, an irrational suspiciousness so great that he wouldn't even point to the direction in the sky he'd come from. To Moran, it all added up to insanity. Doc Urquhart was more than half convinced, and only dubious about the prospects of a cure. Or even of knowing if the cure had worked.

But if all this was a normal pattern for Butch's race and culture—God in heaven if we started tampering with his brain we were throwing away the universe! If we could figure out the—the soul of Butch, if we could make sense out of what he had been doing, then we might figure out how to talk to him.

Of course, a race whose norm included tearing open the bellies of children would not make very pleasant company; but if there were such creatures, then we had to know about them.

"Dr. Moran," I asked, "wouldn't it be wiser, if we can't establish communication, just to keep Butch the way he is? Maybe something will turn up later."

"And maybe Butch will die," said Moran. "Or break loose, which is worse. No, Mr. Muir, the first surgery will be performed in a week." He gave me a frosty smile. "Unless you have thought of an alternative before then."

I wished again that Valerie was here. That girl had a mind like a whip. But more than that, she had a humanness—Yes, I thought, that's what's lacking here. We're all thinking of Butch as an enemy, a problem, a chance for fame and power and wealth. We're none of us trying to put ourselves in his place. We don't really believe, down inside of us, that Butch can have his own hopes and fears and dreams and loves. I wonder how lonely he is?

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We came to the cell and went past the guards. One of the medical techs got out a pair of handcuffs welded to a long light chain. "What's that for?" asked the other. I gathered that he was new to the job, like me.

"Precaution, Jones," said the first. "We've been shackling him for every test, ever since he killed that one man. He usually submits without giving any trouble." He slapped the forty-five at his hip. "He'd better."

"I—see—" The second doctor, Jones, licked his lips. "Christ! He's a big brute, isn't he?"

Doc unlocked the cell door and we stepped inside. The padded floor felt springy under my feet. I wasn't afraid of Butch myself, not when we were five armed men with more to call. For a moment I looked into his yellow eyes and tried to think at him. Maybe he was telepathic— Hello, Butch, Hi, stranger. I'd like to be your friend, if you'll let me.

I had only a minute, then, to see the sudden glazing in those eyes. The huge form trembled, muscles knotting as it warred with itself, and something like a groan came anguished from the opening lips. There was barely time for me to wonder, with a sharp dismay, if he had been taken ill.

Then something knocked me aside. I hit the floor, gasping, and Butch's spurred heel raked my cheek as he leaped over me. Moran yelled, and one powerful arm batted him aside, into Doc. Jones screamed when those claws tore at his face.

The guards outside burst in. Butch hissed and sprang between them. One raised his rifle. Butch hooked claws into his wrist and caught the gun as he let it go. Whirling, the alien clubbed the gun butt into the other soldier's jaw.

Jones was down under Butch's tearing feet. The unhuman face was a frightful thing to watch. The other tech had his automatic out, but it's a clumsy weapon. He fired and missed. Butch struck the rifle almost into his belly and squeezed the trigger.

Two soldiers and two techs down now! Butch paused only to shoot poor Jones in the head. Then he turned and leaped from the cell, out into the hallway.

I scrambled after him, in time to see him mixing it up with the guards on the landing. He threw one down the stairs. A rifle bullet ripped along his left shoulder, but he didn't seem to notice. He knocked the other man to the floor and plunged beyond him—out through the second-story window.

I didn't see what followed. They told me later Butch landed on his feet and made a break for the gate. He didn't reach it, of course. He

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took three slugs in his body before falling to the ground. Then they lashed him tight and carried him back into the house. He was conscious, but had suddenly become quiet. Now and then he mewed a little with pain.

"Eight men injured, one with a bullet through his stomach," said Moran bleakly. "And one more man dead. Do you still think Butch is sane?"

"I don't know," I said. My own torn cheek hurt like the devil. "What is sanity?"

"Comprehension of and appropriate adjustment to reality," snapped Moran, "and I'm not in a mood to argue philosophy, Mr. Muir."

"If Butch's kind of sanity included shooting Sergeant Jones in cold blood," said Leslie heavily, "then he's probably better off without it."

We sat in the waiting room of the institute's surgery. It was a quiet, coldly lighted place, with the sharp hospital smell that I've always hated. It doesn't make sense that idoform should annoy me that way. I realise it's there for my own good, but I can't help my feeling.

Butch was beyond the door, having three bullets cut out of him. Doc Urquhart was acting as assistant to a man sent down by the Surgeon General of the United States. The wounded humans were getting routine treatment in a jerry-rigged hospital tent.

"Look," I said, "for some reason, Butch has to kill, or try to kill a certain kind of people. He can't help himself. In this case, the victim was Jones. In the course of the hassel, Butch saw a chance to escape, and took it. I wouldn't call that insane. How did he know what revenge we might take?"

"If he thinks he can escape, alone and on foot, on an alien planet then he is mad," said Moran. He shot me a glance of dislike.

"Maybe he prefers death," I said. "It can't be very pleasant for him, locked up here."

"Then he can talk to us and explain himself," answered Moran. "We've surely taught him some basic English by now. He was watching our instructors all the time. He must have learned something, if he's capable of it."

"Yeah," I said. "Quite possibly he's gathered what your own cute little plan is. Would you want your brain carved up by somebody who didn't even know its anatomy?"

"Let him ask me to refrain, then," said Moran testily. "And let him stop trying to kill people who've done him no harm."

"How do you know they haven't?" I asked. "Jones had red hair. Maybe red hair is physically painful to him."

"None of the other dead people did," said Leslie.

"Well, what did they have in common, then?"

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Leslie gave me a puzzled look. "I'm damned if I know," he said. "They were all just people. I'd thought of that angle too, and checked up, but there's nothing I can see."

"I'm trying to put myself in Butch's skin," I said. "It's the only way we'll ever understand him. Look, he's a stranger in a strange land, shipwrecked, surrounded by he knows not what. For some reason, he has a run-in with various of the natives and kills them. Naturally, when he's captured he'll expect retaliation. So he won't be especially co-operative."

"How dumb does he think we are?" clipped Moran.

"Let me finish," I said impatiently. The psychiatrist bridled, and I wondered if I was going to get myself fired. "For some reason, Butch must occasionally commit murder and cannot talk to us. Let's assume that he's rational but that those compulsions exist for him. All right. In that case, he'll be able pretty well to guess what we think of him. He knows we think he's nuts. Possibly he knows we intend to try a cure that will only wreck his mind. So why should he stick around? Why shouldn't he take any chance to escape—even to escape into death?"

"If he is under compulsions such as you postulate," said Moran with strained politeness, "then he is not rational. Most schizophrenics think perfectly logically; it's their basic postulates that are wrong, and they have to build up more and more elaborate fictions to rationalize the facts. Which is what you're doing, by the way, Mr. Muir."

"So you're really going through with your shock treatment," I said.

"Since no workable alternative had been offered me—yes."

I thought that the most practical course of all was open to us—simply waiting, and thinking some more on the problem. But it wouldn't do any good to repeat that to Moran. I know when a man has his mind locked tight.

The door opened and Doc Urquhart came out. He looked like another being in his gown and mask, something more and less than human. We got up and stood waiting, not saying anything.

Doc nodded tiredly. "Butch will live," he said. "The injuries aren't too bad. There was an internal hemorrhage, but we've stopped that now."

Will live—I turned away. What did it matter if he lived or not? He was done. We were all done for. We had never really tried to understand, and now it was too late; now Butch's suspicion of us must have hardened into something that only death could break.

One last try: Two days later, I went to see him. The intervening time had been pretty rough for all of us. It wasn't that we'd been

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working hard. In Project Wizard, you wanted to work your guts out. The thing which made it a small hell was that there was really nothing we could do. We just sat around, argued endlessly and ferociously, broke into petty little fits of temper. General Leslie had to crack down with a stiff order to all personnel, which didn't make him any more popular. "The military mind," I grunted. "It is a mind, isn't it?"

"He's doing his best," said Doc gently.

"Such as it is," I snorted.

I couldn't even write home about my troubles. Mail was censored, and all of it was sent off from New York City. I could only drop Valerie a meaningless little note.

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To keep from going crazy, or from being fired, I busied myself studying the reports. There were a lot of them, but they added up to a blank. I considered the FBI investigations of the people whom Butch had attacked. Those were thorough indeed, in the search for some common factor, but there was nothing. The two men in Maine—both ordinary farmers who'd happened to be out late; the boy was only a farm kid coming home at night from a neighbour's. The men whom our alien had assaulted here had nothing special about them that I could discover, just plain Americans. And in his furtive night wanderings before being captured, Butch could only have seen a few humans in brief glimpses, not enough to give him any real basis for conclusions about us.

I remembered how he had stood trembling in the cell. Fighting against his own uncontrollable beserkergang? Probably. But lots of homicidal maniacs do that. Then they're hauled in, they cry and ask why somebody didn't stop them. Damnation: It looked more and more as if Moran was right. Only his notion didn't feel right.

So I went up to the hospital room where Butch was recovering. Time was terribly short. The doctors said he could take trephining in a week or so without serious injury. At least, he could if he were human.

My badge got me past the guards at the entrance to the surgery wing. Butch had a room to himself, with a sentry outside the door and a medical orderly always present. I walked into the room and the orderly looked up from his magazine. He was a big, placid noncom, bored by now like most of the men, but he got up with an air of relief at having some company. "May I see your permit, sir?" he asked.

I handed him the one which Doc had scribbled for me and he nodded. "Okay, sir. But damned if I know what you expect to find out, just watching him."

"Look," I said, "I want to be alone with Butch for a few minutes."

"Sorry, sir, I've got orders—"

"So have I. Just go out in the corridor."

It was pure bluff, but when he tried to protest again I shouted him down. "Dammit, this is direct from the general. Want to call up and bother him about it? Okay, soldier, go ahead, and I hope he puts you to cleaning bedpans for the rest of your hitch."

"Well, all right, sir. Five minutes." He went outside with an uncertain glance at me.

I walked up to the bed. The alien lay in it with a metal collar and chain to keep him there. He'd tried to attack one orderly, but it had been a feeble attempt in his weakened condition, and he'd done nothing against the other men. The room was clean and bleak, full of sunlight but otherwise barren.

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" Hello, Butch," I said. The yellow eyes looked back up at me, a glance of suffering, but nothing came from the broad tusked mouth.

" I brought you a magazine," I went on, and put a copy of *Life* on the table. " The pictures might interest you." I sat down on the chair beside him. " Nobody else thought you might get bored lying here, did they ?"

He turned his head to watch me, the ears cocked forward and the nose-antennae curled over in my direction. One grey-furred hand lay on the sheet, strong and big and strangely helpless.

" I don't know what the devil I expect to gain by seeing you," I told him softly. " I don't even know if you understand me, though I suspect you get the drift of it. Maybe it's just for myself. Here you are, the most wonderful thing that's happened in all our history, and they've chained you up like this. I'd like to be friends, Butch."

The hand doubled up into a fist, and the claws leaped out, but he didn't slash at me. It was only a gesture.

" That's right," I said. " You can't trust us any more. Let's look at it from your angle for a while. You've had rotten luck, haven't you ? First the crash of your ship, then being stranded here God knows how many light-years from home. Then something which made you attack us, willy-nilly, and something else which made it impossible for you to talk to us. So naturally, you think, we believe you're mad. We'll never trust you. And therefore you'll never trust us. You've no way of knowing whether I really mean this or whether it's just an attempt to gain your confidence; so you'll never have faith in any of our species."

I shook my head. " Damn it, Butch, can't you make even one friendly move ? Can't you do something to show us you're rational, that you want to be accepted as an ambassador instead of an enemy ? If you'd only behave yourself better, and draw us a few pictures or—anything—Well, hell, all you have to do is make your sanity look a little more probable. Then they'll at least delay the things they're going to do to you. It'll buy you time in which to work out a real understanding with us."

Those eyes never blinked, watching me, but the only sound from him was the slow deep breathing. I sighed. " Is it that you don't trust us?" I asked. " Is it that you fear us—or, perhaps, fear our fear of you ? You imagine us thinking that since we can't get along with your kind, we'd better wipe you all out ? Hell, Butch, we aren't that dumb. Believe me, we aren't."

He turned his face away from me.

" If that's how you want it—" I got up, feeling wholly beaten. " If you just won't talk to mankind, I can't make you. Man isn't such a bad sort, and you've hit one of the most decent groups of our race. But

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you don't leave us much choice. Our best bet would be just to save you, but that's apparently not going to be allowed. Some men are so impatient to get at your knowledge that they'll destroy it in their hurry."

Was that an answering sigh, low in his throat? But he wasn't even looking at me any more. There was something utterly defeated about the way he lay there. I thought of him locked inside his own skull, wanting home and security and love as all life wants them, but he couldn't get free of himself. He probably hated himself just then. Maybe he would be glad to escape his body, through death or the ruining of this mind.

"Well," I said, feeling the same darkness in my own heart, "well, if you won't talk to man, then man can't talk to you. Goodbye, Butch."

It was then that the idea came to me. It didn't come all at once, nor did it leave me gasping at my own brilliance. I stood there for a long while, not moving, and the thing grew within me. Crazy, sure. Crazy as a loon. But—

What did we have to lose?

I snatched back the magazine and went out of that room shivering. When I got downstairs, I began to run.

"Sorry, sir," the orderly in the outer office told me. "The general's in conference."

I had half a mind to brush him aside and burst in. It would have been the dramatic thing to do. But I found a chair instead and sat down and tried to read. I'd gone through nearly a pack of cigarettes before I realized that I'd been reading the same page over and over.

The inner door opened and Moran came out. I didn't wait any longer, but charged past him and the orderly. Leslie glanced up from his desk, annoyed.

"General—" My throat felt sandy. "General, I may have the answer."

"Eh?" He looked at me without much hope. "Oh, it's you, Mr. Muir. What do you mean?"

"I may have a way to get Butch to talk," I said. The words stumbled over each other in my hurry.

Moran turned around and came back in. "What's this?" he asked.

"I've got an idea, I tell you!" I shouted.

"Well?" Leslie ripped it out in a parade-ground voice. "Well, what is it?"

"Look," I chatted, "Butch is sane, but—but—" That blasted stutter which always hits me when I get excited broke me off.

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Moran raised his brows. "This is somewhat of an obsession with Mr. Muir, General," he said. "He'll go to any length to defend his notion, in the face of all the facts."

"I've got a way to test it!" I yelled. Which was a lie, because I had no idea whether it was practical or not.

"Go ahead, then," said Moran. "By that time, we should have Butch back to normal anyway."

"By that time Butch will really be insane!" I answered. "You're the one with the obsession. Anything to get at his brain—but do you give a hoot in hell about getting at his mind?"

"Calm down!" Leslie stood up and barked the words. "Both of you. This is no time for personalities."

Moran shrugged. "I tell you, the first surgical investigation is set for next Wednesday," he declared. "Nobody could be cleared by that time."

"You couldn't postpone the work, could you?" I spoke to Leslie, almost begging.

He shook his head. "I'm afraid not. Washington is in a hurry too, you know. The orders are definite. It's too risky keeping Butch forever the way he is, and the rewards for success are too big and urgently needed."

I sat down, feeling suddenly drained. "Never mind, then," I mumbled. "Never mind."

"Let's have your ideas," said Leslie.

Moran smiled sarcastically and sat down too.

I told them.

"You're nuts!" said Moran inelegantly. "It's the most childish thing I ever—"

"What harm would it do to try?" I asked with bitterness. "Or are you afraid it might succeed? Then you wouldn't get your chance to—"

"That will do, Mr. Muir!" rapped Leslie. He drummed on his teeth with a nervous forefinger. "It's an—interesting—notion. Wild, but then this whole business is so crazy . . . However, there's still that matter of security clearance."

"Bring them here anyway," I said. "You can keep them here if it doesn't work, till they've been checked."

"That's not so simple." Moran's tone grew condescending. "General Leslie has orders too, you know. Regulations—"

The soldier stood for a minute longer. The military mind I thought again.

Suddenly he slammed his fist down on the desk. "By God, I'll do it!"

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"They'll court-martial you!" yelled Moran.

"Yeah," said Leslie. "And if it pans out, I'll get by with a reprimand or something. If it doesn't—to hell with it."

Moran turned his back on us.

I held out my hand. "Sir," I said, "may I apologize?"

Two days later, the big show went on the road. I hadn't slept much, and it was with a certain grogginess that I watched the long train of cars draw into the yard. I needed a drink, badly.

The soldiers had been well rehearsed. You could see what they really wanted to do, but they snapped to attention with spine-breaking violence. A military band came out of one barrack and broke into a loud, brassy march. Civilians got down on their knees. I glanced up at the window af Butch's room. We'd put him on a longer chain, so he could walk over to it, but I didn't know if he was looking out or not. I prayed that he was.

Valerie stepped from the first car. She wore a skirt and blouse in the brightest colours and snuggest fit she'd been able to find. Her hair curled down to her shoulders, soft gold in the wintry sunlight. That's my wife, I thought, and kowtowed to her. The slush was cold.

She stamped by me, cracking the whip she held in one hand. It tickled along my back, mischievously. I grovelled lower. The band played louder. The soldiers saluted.

A girl was coming out of each of the other cars. Leslie's agents had done a fine job, picking the most curvaceous, decorative, utterly female human beings they could find. I hoped they'd been able to match the other essential qualifications: courage, serenity, gentleness.

They swept past us in a blaze of hues. Most had put on jewellery for the occasion, it flashed in the light, there under the tall blue sky of Earth. Into the building they went, not deigning to notice us. Into the house and up the stairs and along the hall to Butch's room.

Doc Urquhart's tests yesterday had shown that my guess about the cause of Butch's furies was probably right; and on the basis of those results, we had not told the girls they had anything to fear, we had indeed stressed his complete harmlessness. But we could still be wrong. There could be more than one possible cause. We had men planted with guns, of course, ready to come in at the first shriek for help. But Butch could disembowel at least one with a sweep of his claws before they knew he meant to do it. Valerie, I thought, Valerie will go first, I know she will. Please, God, watch over her. Watch over all of us today.

We waited. And there was silence. There was a thousand years of silence.

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General Leslie appeared at the front door. His elegant pants were wrinkled from kneeling before the women. His face had a strangeness about it. "Come along, Muir," he said quietly. "They want you there too."

I followed him into the house. The whole place had a wire-tight waiting over it. We didn't see anyone as we went upstairs, until Moran stepped from one of the labs. His mouth was twisted.

"This is preposterous!" he said. "The beast's just using the chance to disarm our suspicions. I won't have it!"

"I'm the boss here," said Leslie.

"You won't be for long, when Washington hears—"

"Can we trust this bird not to upset the applecart?" I asked maliciously.

"Um, well—protective custody—" Leslie grinned and turned to the MP who was following us. "Conduct Dr. Moran to his quarters," he ordered. "And see that he stays there."

Off they went, I had an idiotic desire to thumb my nose.

We continued down the hall to the hospital room. At its door, the sentry stood more rigid than he'd ever done for an inspection—but he caught my eye and winked at me. Leslie and I knelt again. We waited till Valerie noticed us and said coldly: "All right, come on in. I want you to take his chain off. Now!"

The room was a swirl of colour and shapeliness and bright light voices chattering. Valerie sat on the edge of the bed. She was stroking Butch's big fanged head. Another girl was bending over him, patting his shoulder, and a third was holding his left hand.

His right hand was clutching a pencil, and he was drawing a diagram of a planetary system.

Leslie, Doc, and I had to sneak into Valerie's room. It wouldn't do for Butch to see the slaves killing a fifth of Scotch with the boss. But we just had to celebrate.

"Hullo, property," said my wife.

I grabbed her close and shut off her wisecracks in the best possible manner.

After a while, she said rather breathlessly: "I still don't get it. I still don't see how you managed it. That briefing they gave us was really brief."

I poured Scotch over ice cubes and said smugly: "Depends on a number of things, darling. My main assumption was that Butch is sane, only his sanity doesn't quite correspond to ours. Could you expect identical behaviour patterns in a creature from the stars? No, hardly.

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" But if he was sane, then he wouldn't willingly have attacked those poor people. He must feel like hell about it. Which, incidentally, gives us a moral ascendancy that ought to make him very glad to co-operate with us—now that the dam's been broken. But why, then, did he run amok ?"

I took a long sip and went on: " I remembered that Sergeant Jones had been scared of Butch. It occured to me that probably all those who were attacked had also been frightened. Those people in Maine —well, shucks, if you saw a thing like Butch on a dark night, wouldn't you jump out of your pretty pink unmentionables ? And a man here who knew his bad reputation might also get frightened at the thought of working with a monster that could kill him.

" Remembering that Butch has a sense of smell as good as a dog's, and that a dog can smell when you're afraid and will often bite you on that account—well, it added up."

" It's a matter of high adrenalin output," nodded Doc. " Fear or rage give you a different odour, even if your own nose can't detect it. You should have seen how Butch reacted to a tiny whiff yesterday." He frowned. " But why should the scent of adrenalin drive him into a homicidal fury, eh ?"

" I don't know," I said. " But here's a guess. On his home world, his species has—or had once—a natural enemy which smelled strongly of adrenalin. You told me yourself, Doc, that his own glands don't seem to produce that particular chemical. Anyway, his life-form acquired a built-in instinct to attack when it caught that scent." Now I know that I was essentially right about this point.

" Could be," said Doc. " We've got a lot of evolutionary hangovers ourselves that only cause us trouble now. The appendix, for instance."

" Well," I continued, " Butch knew he's got himself in bad with our race. He wasn't going to tell us anything, lest we try to strike back at his people in revenge or out of fear."

" He says he'll talk in seventeen days," Valerie told us.

" Huh ?" asked Leslie. " How— ?"

" Sign language. Pictures. He got the idea across. He's learned a fair amount of English, but for some reason he can't speak till that period is up."

We found out why, later. Butch's religion, which he takes pretty seriously, requires silence for a given time in mourning for dead comrades. You can't call him insane for sticking by those principles, any more than you can call a Jew or a Moslem crazy for refusing to eat pork or a Catholic mad for going to considerable trouble to attend Mass. It's important to him, that's all. We've a lot of compulsions, like marital fidelity, which don't make much sense to his mind.

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We also found that my guess about the variance of his symbology from ours had been right; it had taken him a long time to understand what we were trying to do with our diagrams, and how he should respond. By then he had decided it was hopeless to communicate.

"Well," I said on this particular evening, "somehow he couldn't talk to us, and he'd concluded we were his enemies in any event. So why should he try to co-operate with us in any way? It looked like an impasse, till I remembered that in all probability Butch had never seen a woman. Women aren't likely to wander on lonely roads after dark, and once he'd been captured, he'd been in an exclusively masculine environment. He may have overheard conversation about women, and had doubtless seen some pictures, but that wouldn't convey much to him.

"And he's hermaphroditic, which makes it likely that all the higher like-forms on his planet are. Of course, he might have seen bi-sexual animals on other worlds, but then again he might not. The fact that the spaceship did go out of control suggests it's an early model, that this may even be the first interstellar expedition of his race.

"So—why shouldn't he assume that a woman, if he saw one, belonged to a different species from the men? It would be a natural idea. And if this other species were the real rulers of Earth, with us merely their slaves and peasants, they wouldn't care much that a few males had been knocked off. They'd be furious that the inferior race had dared to lock up a visitor from space and maltreat him without telling them. As soon as they learned he was here, they'd come running to make amends.

"Since we didn't tell the girls that Butch was dangerous, they didn't fear him. I hope he takes the lack of adrenalin smell for a characteristic of the master race and therefore concludes he won't always be getting into trouble with them. If that works out"—it did—"he's going to fall all over himself trying to co-operate with you girls."

Valerie ruffled my hair. "Sometimes," she murmured, "I almost think there's a brain underneath that mop."

Leslie shifted awkwardly. "How long does this farce have to go on?" he asked.

"Oh, not too long, I suppose," I answered. "Till the girls have won his trust, and talked to him, and gradually broken the news. Then he can start telling us how to build spaceships."

"Yeah," said Leslie. "And meanwhile he's going to think men aren't human!"

Valerie grinned at us. "Well," she replied, "are they?"

Poul Anderson

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Several years ago a promising new contributor to this magazine consolidated his popularity with a series of novelettes based on a single theme—the grim struggle for survival by Earthmen on the planet Mars. Into these five stories (" Precedent," " Without Bugles," " Men Only," " Alien Dust," and " Pistol Point ") author E. C. Tubb projected some of his own rugged individuality and revealed an unexpected sincerity and strength of characterisation, plus a thoughtful awareness of the problems which await the first human colonists on Mars.

Encouraged by John Carnell, Ted Tubb added three new chapters to his Martian saga, and revised the whole into a book just published called **Alien Dust** (T. V. Boardman—9/6d). The result is a supremely effective science-fiction novel. Tubb, I think, in his more serious work has developed a style no less striking than Hemingway in his field, and in my estimation, comparable. Often brutal, but always logical, he describes the dire struggle of men to establish a hold on the inhospitable red planet. A tenure made precarious by cruel fate, lack of support from Earth, biological setbacks and, above all, the unrelenting fury of the red Martian dust which chokes every endeavour. He has realised, unlike many writers, that man exists uneasily in the safety of a narrow margin of life-sustaining conditions on his own planet, and if adaptation to another planet such as Mars will be at all possible then it will be at a high and terrible cost. The verisimilitude of *Alien Dust* is a welcome change from the usual fancies of extra-terrestrial adventure, and detracts nothing from the action-paced interest of this absorbing novel.

Rex Gordon, the author of **Utopia 239** (Heinemann—9/6d) has several novels to his credit under other names (I feel that Gordon is a pseudonym for S. B. Hough under which name most of the books are listed). But it is evident that this is his first attempt at a science-fiction novel. It starts shakily with stock characters going through the motions of a trite situation. A young atomic research man rebels against the irksome security measures which are making difficult his romance with the daughter of a scientist who has been discredited for freethinking

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collaboration with the 'enemy.' Father knocks up a time-machine from a few bits and pieces and some theory (which is no more convincing, of course, than any other attempt to rationalize time-travel) and the trio escape into the future. So far, so mediocre; but from the moment they land a hundred years hence in the middle of a vast plain of corn where once a town stood, story interest picks up. It is, in fact, the subsequent conflict of present day moral codes with the utterly different standards of behaviour of the future world, that is the fascinating aspect of this otherwise prosaic novel. The author has strong views on the decline of modern morality and the inevitable destruction of civilization (sic) by atomic warfare, and uses some ingenuity in showing the development of the utopian city-state from its origin as a holiday-camp. The libidinous aspect of Utopia 239 is suitably contrasted with the almost decorous first half of the book, but the whole is littered with clichés and some poor dialogue which does not help the author to make his point effective.

David Duncan's **Dark Dominion** (Heinemann—9/6d) is another example of an established author whose first science-fiction novel is not quite successful. This is better fare, however, despite the impression I received that I was reading one of those long, sober stories which I used to enjoy in the Quarterly magazines back in the early '30s but which now appear hopelessly antiquated. Philip Ambert is director of the Magellan Project, an American attempt to launch a huge satellite space-ship direct from Earth by liquid fuel (shades of Clarke and Ley!) Incidental research has produced a substance of strange properties called Magellanium (mis-spelt on the jacket, but this is cavilling, I fear). Concurrent with these rather unconvincing activities, Ambert gets himself into fearful trouble with his own security people and manages to antagonize a fellow scientist—a couple of unlikely incidents as drawn—but which fit nicely into the plot. The other nations get to hear of the imminent launching and are understandably apprehensive of the American military's objective of hydrogen bombs poised conveniently overhead for press-button blackmail. They attack the rocket site and destroy the fuel. Fortunately the newly discovered Magellanium comes to the rescue and enables the space-ship to take off (and by what a method !) The twist ending redeems the story somewhat, and it will certainly provide some enjoyment if you are in an uncritical mood.

William F. Temple's **Martin Magnus, Planet Rover** (Frederick Muller—7/6d) introduces a new character who is a super-trouble-shooter for the S.I.D. of Earth's Scientific Bureau, which handles the manifold problems of the Inner Planets. Lots of scope here, obviously,

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for a whole series of similarly exuberant space adventures, for although Magnus is an exasperating thorn in officialdom's side, he is indispensible when, as on this occasion, the preparations for the first Venus flight get fouled up with attacks on Lunar Base by tentacled Moon creatures, and stranger events are happening on Earth in the undersea food plantations. This is all good, clean fun and, although not indicated as such, is obviously slanted for the upper-level juvenile market. But do not be deceived for Temple is equally competent in this medium as in his more serious science-fiction, and I have read far worse in alleged adult stf. If you are not too concerned with the simple scientific background which differs at times from accepted theory (but who knows, the pundits could be wrong and there *is* air on the Moon and water on Venus), and can listen to " Dan Dare " without flinching too much—then this might be useful light reading for you. Only better not leave it around when schoolboys are near !

Jonathan Burke's **Alien Landscapes** (Museum Press—8/6d) is a collection of his stories from various British magazines, five short stories plus a novelette, " The Old Man of the Stars " which takes up half the book. They provide a variety of ideas ranging from the immortality of an interstellar traveller to domestic trouble over robots, and parallel worlds to insidious Martian invasion. But for me the stories fail to sparkle and I found them uniformly dull and uninteresting.

For sheer entertainment, Isaac Asimov's space-operas are hard to beat. His work has aroused a lot of controversy in the past, including criticism that his stories merely transfer modern parochialism to a never-never-land of galactic empires in the remote future, and that his mechanised plots are repetitive. Nevertheless I think the formula is successful and the number of his published novels indicative of his popularity. The latest, **The Currents Of Space** (T. V. Boardman—9/6d) is probably his best since *Pebble in the Sky*, and once again we have the intricate plotting and casual galactic background which Asimov does so well. As usual Earth is the remote, almost mythical planet, lost in history, which is thought to be the cradle of mankind. But it is an Earthman, by vocation a spatio-analyst who, in the course of plotting the basic fabric of the universe (in which currents of elements, particularly carbon, can influence the nuclear processes of stars), discovers that the sun of Florina, a planet which produces the fabulous *kyrt* for the wealth of and under the subservience of neighbouring Sark, is due to go nova. Here is a factor which can disrupt the Galaxy, and certainly interests the Trantorian Empire. But the spatio-analyst gets mysteriously psycho-probed on Sark, and is hidden on Florina as Rik, a half-crazed *kyrt* worker. From then on, plot and counter-

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plot blend in fast suspenseful story-telling, with a little better characterisation than usual.

The third in Michael Joseph's *Novels of Tomorrow* series introduces a new author John Boland, whose first novel **White August** (M. Joseph, 10/6d) utilizes a theme rare in fiction—weather control as a means of warfare. Imagine a hot English summer day suddenly transformed by the appearance of a greenish oblong mass of dense cloud formation covering the whole of the British Isles. Snow begins to fall. Surface temperature rapidly descends to freezing point and the relentless snow piles up, threatening the destruction of all life. The government suspects an unnamed Power behind this menace, an insidious weapon more powerful than the hydrogen bomb, and guesses that the phenomenon is the result of exceptionally ultra-high frequency radio-wave research by a psychotic scientist whose prior disappearance is now confirmed as traitorous. The snow is found to be increasingly radioactive and Britain is faced with a time limit on its life. The N.A.T.O. powers dare not start a retaliatory atom war without proof, and mass evacuation is impossible because of the rapid deterioration of communications and food supplies. In any case there is nowhere to go because any other nation could be next on the list. After such an object lesson the Enemy could dictate his own terms to the world. The Prime Minister realises that the only salvation is to find quickly and utterly destroy the transmitting source.

Here is scope for a very powerful novel, but it seems to me that Mr. Boland just misses the greatness that the theme demands. The effect on the civil population is shown only in one or two isolated and unconvincing episodes, and the central figures of Dr. Garratt, the scientist on whose ability to develop a detector for tracking the transmitter, Warburton, the Prime Minister, has pinned his hopes, do not come to life. Nevertheless the book has its exciting moments, and I can only wish that the author had made more of his idea, increased the length half as much again, and managed to instil a greater sense of urgency into the proceedings. As it is, and what with the association of titles, I found myself comparing unfavourably its thrills and entertainment value with those similar " catastrophe " novels that Dennis Wheatley used to do so well, like *Black August* or *Sixty Days to Live.*

By strange coincidence weather control is also the theme of another new novel, **The Sky Block** by Steve Frazee (The Bodley Head, 9/6d). This is an American product but is less polished than *White August.* The comparison is in fact very interesting. Here the " weather-wrecker " is a transmitter operated by the Enemy from the depths of a mountain in the Middle West of the U.S.A. and it is causing a drought

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in the vast farming belt. But once again an effective picture of the power of such a weapon is not forthcoming, and the plot concerns itself with the efforts of the military to find and destroy the menace. In a dramatic manner a mining engineer with local knowledge, Platt Vencel, is involved, but the confusing cross-purposes of the various secret governmental agencies who are in on the mission tends to make the action a little jerky, but Mr. Frazee handles the taut situations and appropriate dialogue very well and turns out a successful suspense-thriller.

Although it is good to see an increasing number of Entlish authors having their science fiction novels published here, much of the material is reprinted from American sources. Most are well chosen but now and then the agents manage to sell an item which really should never have had the presumption to leave home. A good example of this ineptitude in choice is George O. Smith's **Hellflower** (The Bodley Head, 9/6d). G. O. Smith, like his better known namesake, is a prolific author of "space-opera." Most of his magazine stories are good average reading, and his first published collection *Venus Equilateral* was a good example of technically-detailed pseudo-science in a racy style, but his subsequent three hard-cover novels had little to commend them. Of these *Hellflower* was undoubtedly the poorest and I am surprised to see its resurrection over here. The story concerns the efforts of a discredited space-pilot to uncover the gang who are peddling a dangerous narcotic flower all over the solar system. The trail leads to an alien humanoid race from another star who are using this method to infiltrate our own system and demoralise the women of the human race, thus paving the way for invasion. But the mechanics of the plot are so incredible and the lacing of sex and intrigue so indigestible that I could derive little enjoyment from reading it. I have no quarrel with space-adventure when it is well-written and sensibly plotted, but I do dislike cheap pulp detective stories disguised as so-called science fiction.

What a pleasure it is to turn to one of the modern masters, our own Arthur C. Clarke, whose long-awaited new novel **Earthlight** (Frederick Muller, 10/6d) is just published. Clarke again wields his magic pen in the grand Wellsian manner, and adds his own individual garnishment of almost poetic descriptive power which makes a lunar landscape or a flight through space into a thing of beauty, yet soundly couched in rock-hard scientific accuracy. The secret of his success, of course, is sound characterisation and realism, coupled with an immaculate style and an attention to detail which make his books a delight to read.

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In *Earthlight* he reverts from his breath-taking concepts of *Childhood's End* and busies himself with a setting two hundred years in the future. There has been no war during this period and space travel has blossomed fruitfully, with a scientific base on the Moon and flourishing colonies on Mars, Venus and Mercury, and frontiers pushing out to the satellites of the giant outer planets. The drawback to this development is that nowhere else except on Earth have essential heavy metals been found. The Triplanetary Federation, with its superiority of men with brains and purpose, is faced with an increasingly diminishing quota from Earth, where life, by virtue of its natural wealth, is luxurious by comparison. As with the American Colonies and England under George III, so friction develops and war appears inevitable. Earth Security learns that information is leaking out to the Federation from the Moon station, but not how or through whom. So a most likeable spy, ostensibly a cost accountant, Bertram Sadler, is sent to the lunar base to uncover the leak. It little matters that he does not discover the Federation sympathiser until thirty years later, because a source of heavy metals is discovered beneath the Moon's crust and above this marvellously fortified project takes places a most fantastic and exciting contest of arms between the base and the attacking Federation spaceships. It is the finest descriptive space battle I have ever read, and it is followed by a fascinating rescue in space, and a logical solution to the problem indicative of Clarke's stature as a novelist with a thoughtful humanitarian and scientific outlook.

There are also two pocket books, both excellent value for money and worthy of your attention. Robert Heinlein's first book in the Future history series, **The Man Who Sold The Moon** (Pan Books—2/-) is a complete reprint of the hard cover edition containing nine very good stories by one of the top writers in the field. The second is an original reprint—in other words a new anthology from John Carnell, not previously published in book form, called the **Best From New Worlds** (T. V. Boardman—2/-), a title which needs no further recommendation.

Leslie Flood

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